DOCUMENT RESUME

ED 413 706 EC 305 980

AUTHOR	Carlson, Brenda; Samels, Karen
TITLE	Kids Included through Technology Are Enriched: A Guidebook for Teachers of Young Children.
INSTITUTION	PACER Center, Inc., Minneapolis, MN.
SPONS AGENCY	Special Education Programs (ED/OSERS), Washington, DC.
PUB DATE	1997-00-00
NOTE	130p.
AVAILABLE FROM	PACER Center, Inc., 4826 Chicago Avenue South, Minneapolis, MN 55417-1098; telephone: 612-827-2966; TTY: 612-827-7770.
PUB TYPE	Guides - Non-Classroom (055)
EDRS PRICE	MF01/PC06 Plus Postage.
DESCRIPTORS	*Appropriate Technology; *Assistive Devices (for Disabled); *Augmentative and Alternative Communication; *Computer Assisted Instruction; Computer Software Selection; Cultural Differences; Curriculum Development; *Disabilities; Early Childhood Education; *Educational Technology; Individualized Education Programs; Individualized Family Service Plans; Special Needs Students; Student Evaluation; Young Children

ABSTRACT

This guidebook is designed to provide information on technology to teachers and service providers who work with children with special needs. It may also be helpful for parents and caregivers of young children. Topics include: (1) the definition of assistive technology; (2) the philosophy of using technology with young children and a rationale that demonstrates benefits for youngsters who have special needs; (3) how technology supports early learning, particularly self-expression, communication, social interactions, and education; (4) assessing for helpful technology; (5) identifying the tools of assistive technology; (6) team tasks in assessment; (7) choosing computer technology for the classroom, including selecting appropriate software and peripheral devices; (8) introducing other devices such as a trackball, mouse keys, touch screen, drawing tablets, and electronic pointing devices; (9) keyboard modifications and alternative keyboards; (10) switch technology; (11) augmentative and alternative communication; (12) effective practices for teaching children to communicate; (13) integrating technology into the early childhood classroom, including how to design lessons with technology; (14) how to use technology for teachers' administrative tasks; (15) assistive technology in a cultural context; (16) assistive technology in the Individualized Education Program or the Individualized Family Service Plan; and (17) funding issues. Appendices include teacher resources, an explanation of legal issues, and a list of resource organizations. (Contains 32 references.) (CR)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 413 706

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Kids ncluded through Technology are Enriched

A Guidebook for Teachers of Young Children

PACER Center, Inc.

BEST COPY AVAILABLE

EC 305980

Kids Included through Technology are Enriched

A Guidebook for Teachers of Young Children

Produced by PACER Center:

Brenda Carlson, Project KITE Coordinator

Karen Samels, Project KITE Technology Specialist

Beth Wright, Design and Layout Editor

Paula Goldberg, PACER Co-director

Marge Goldberg, PACER Co-director

Funded by a grant from:
U.S. Department of Education
Office of Special Education Programs
Early Education Program for Children With Disabilities

©1997 PACER Center, Inc., 4826 Chicago Ave. So., Minneapolis, MN 55417-1098
(612) 827-2966 Voice; (612) 827-7770 TTY; (800) 53PACER toll-free in MN
E-mail: mnpacer@edu.gte.net
Web site: http://www.pacer.org

Special thanks to Mollie Wise and Susan Goodman
for their patience and advice.

Also thank you to reviewers:

Pat Bill
Pat Brandstaetter
Penny Cammack
Latonia Daniels
Sheri Doughman
Dixie Jordan
Joan Karp
Virginia Richardson
Jessica Swanson
Deb Trigg

Contents

Preface 1

Chapter I: Introduction 3

Chapter II: Technology Supports Early Learning 8

Chapter III: Assessing for Helpful Technology 12

Chapter IV: Choosing Computer Technology for the Classroom 18

Chapter V: Introducing Other Devices 25

Chapter VI: Integrating Technology into the Early Childhood Classroom 38

Chapter VII: Assistive Technology in a Cultural Context 45

Chapter VIII: Assistive Technology in the IEP or IFSP 51

Appendix A

Bibliography 62

Appendix B: Teacher Resources

Planning Technology Interventions with Families Questionnaire Form 67

Effective Lessons to Integrate Technology 70

Project KITE's Software Evaluation Form 71

Software for Children 72

Switch Software for Young Children 78

Technology Vendors and Organizations 79

Appendix C: Legal Issues

Part C- Infants and Toddlers with Disabilities: Assistive Technology Policy 84

History of Laws Concerning Assistive Technology in the Education of Children with Disabilities 96

Appendix D

About Project KITE 101

About PACER Center 102

Appendix E: Other Organizations

Alliance for Technology Access 104

State Projects Funded under the Technology-Related Assistance for Individuals with Disabilities Act of 1988 110

Parent Training and Information Centers 118

Preface

Not long ago the concept of 'technology for young children' would have been considered an oxymoron, two terms which do not fit together. Today, technology has proven itself invaluable for the inclusion of young children with disabilities in their homes and classrooms. Project KITE, at the PACER Center, was funded to develop a training program to give teachers and parents skills to use technology effectively with children and to provide opportunity for more children to have access to technology. This guidebook, a result of Project KITE, is written for teachers and service providers who work with children with special needs. It will also be helpful for parents and caregivers of young children.

The book is organized similar to a piece of music. It begins with an overture, a philosophy of using technology with young children and a rationale, demonstrating benefits for youngsters who have special needs (Chapters 1 and 2). Then there are three movements. Dreaming, planning, and learning about the child comprise the first movement (Chapter 3). The second movement involves learning about technology tools, computers and other devices that have been used successfully with preschoolers (Chapters 4 and 5). The final three chapters (6-8) return to a focus on the child using appropriate technology tools in the classroom, within the family culture, and in the individualized education program. While the chapters can stand alone as individual references for teachers, just as an individual movement can be enjoyed outside the context of the entire concerto, the greatest benefit will be gained by reading the entire guidebook to understand its underlying rationale and how to implement its recommendations in practical ways.

The Appendices have been compiled to offer further resources for busy educators. References are cited in Appendix A, and a variety of practical teacher resources are collected in Appendix B. Appendix C contains a history of the laws and a summary of legal issues pertaining to assistive technology. Information about the project which led to the development of the book is attached as Appendix D. In Appendix E are lists of other organizations related to assistive technology and children with disabilities.

Chapter I
Introduction

Stacey looked around her circle of children. Andrew was listening attentively, his eyes twinkling under a shock of unruly hair. Kisha sat next to him and Antonio settled down close to Kisha. Their dark eyes were focused on the computer at Stacey's elbow. Other children pushed in for a closer look while an aide placed Bekah on Stacey's lap.

The goal for the day's activity was to reinforce the concepts of circle, square, rectangle and triangle. Bekah has Down syndrome. She didn't know the names of the shapes, but it was important for her to be included with her peers. The individual objectives for her were to use her 'computer finger' on the touch screen, to make choices by pointing at one of several objects, and to understand that her pointing caused the computer to respond in order to prepare her for future learning with the computer.

Stacey showed Bekah how to point with her computer finger and instructed her to choose a shape on the monitor. Bekah pointed to the circle. "What shape did Bekah choose?" Stacey asked the class. "Circle!" said Andrew, Kisha, Antonio, and company in chorus. "Choose another shape, Bekah.... What shape did Bekah choose?" Stacey was pleased that her belief was correct. All the children could be included at their own levels by using the computer. All of them were learning the objectives designed for them.

Professionals who serve on support teams for children with disabilities are skilled and knowledgeable in many areas. Stacey was a mainstream classroom teacher in an inclusive setting. She had a solid knowledge base in all

the academic areas. She was well-informed about writing objectives and selecting age appropriate activities to help meet those objectives. She was skilled in managing the classroom and presenting the lessons in a way that kept the attention of the children. She understood the cultural groups represented in her classroom and worked toward demonstrating sensitivity to each child's background. In addition, she knew about Bekah's disabilities and thought of ways to include her in the life of the classroom. Technology was one of the tools Stacey learned to use to include Bekah.

Computers and other technologies can provide children with disabilities increased access to education. As technology becomes more accessible and affordable, professionals from all areas must keep abreast of what is available to assist the children with special needs in early childhood settings.

What is Assistive Technology?

Stacey used a computer and a touch screen in the true story described above. The term '*technology*' can describe both the computer and the touch screen. *Assistive technology devices*, in a broad sense, include "any items, pieces of equipment, or product systems, whether bought off the shelf, modified, or customized, used to increase, maintain, or improve the functional capabilities of a child with a disability" (IDEA, 1997). For the purpose of this guidebook, the phrase 'assistive technology' will include only educational tools such as computers and their adaptations, communication devices, and switches.

Assistive Technology...

... Devices - any items, pieces of equipment, or product systems, whether bought off the shelf, modified, or customized, used to increase, maintain, or improve the functional capabilities of students with disabilities.

... Services - are any services that directly help a student with a disability in the selection, acquisition, or use of an AT device.

Figure 1.1

This guidebook is about children, not just technology. Professionals and parents who are aware of assistive technology can begin to identify specific features of these tools which may enable children with special needs to meet individual objectives. The equipment and techniques described here are tools to offer children a voice and a means to explore and control

their environments. Technology can allow children access to the curriculum and break down barriers to participation and independence.

A variety of technology tools which have been used successfully with young children are described. These tools are only representative of a vast array of technologies available to assist children with special needs.

Philosophy

In working with Stacey and other teachers of young children, seven principles comprising a philosophy of technology in early childhood education were identified.

- *Technology is a tool, not a toy.*

Just as they use books, autoharps, and painting easels to foster learning in young children, technology is one of many educational tools employed by early childhood educators. To be used appropriately, technology must be carefully selected and integrated to meet curricular or individual child objectives.

- *Technology introduced earlier is better than technology introduced later.*

Research shows that early intervention for young children with disabilities is often effective in ameliorating difficulties. This does not mean that all three-year-olds need computers. However, a variety of technology and assistive devices may allow youngsters to advance in ways that may otherwise be impossible.

Philosophy of Technology in Education

*Technology is a tool, not a toy.

*Technology introduced earlier is better than technology introduced later.

*Older technology is better than no technology.

*Technology is to be integrated, not tacked on.

*Curriculum drives technology; technology does not drive the curriculum.

*Technology is for all, not just some.

*A little technology used properly is better than much technology collecting dust.

Figure 1.2

- *Older technology is better than no technology.*

In many instances older computers, software, and adaptive devices are available to early childhood settings at low costs and may offer children with disabilities the opportunity to learn and to develop early computer skills.

- *Technology is to be integrated, not tacked on.*

The integration of another tool to help meet objectives can be a welcome relief to busy teachers. Technology becomes part of the life of the classroom during circle time and snack time, in addition to being part of a learning center. A computer can be used with the children as a presentation tool, a reinforcement, and a motivator, and by the teacher as a word processor, a desktop publisher, and a data collector. Ideally, as it is integrated and used to its potential, technology will simplify teaching tasks in the classroom and in the office.

- *Curriculum drives technology; technology does not drive the curriculum.*

In thinking about any sort of technology to implement in a classroom or in the life of a child with disabilities, curricular objectives for the classroom and individual objectives for the child must be considered first in choosing software and devices.

- *Technology is for all, not just some.*

Adaptations and assistive devices allow nearly all children access to communication and learning. When a switch is used to give one child access to the activities of the classroom, all the children should experience using the switch so the individual child is truly included. Technology provided in early childhood settings may be the first opportunity for some children to learn about computers, software, and related ways to gain information.

- *A little technology used properly is better than much technology collecting dust.*

Too often complicated and expensive devices are purchased for children but remain in wheelchair pouches or backpacks because no one knows how to program them. In many cases, simpler, less expensive devices can meet the needs and are more easily adapted for the child in natural environments.

"Less is better" applies to software selection, as well. Software that allows individuals to express themselves, reflecting their cultural backgrounds, is versatile in the classroom and is appealing to children. A few pieces of well-chosen software can be sufficient to meet the needs of a classroom.

Parents and teachers often remark that children seem to have a "sense" about technology; they accept it as part of their world. Adults who work with young children with special needs must become informed about the potential of technology to assist children, keep current on new developments, and use technology for children's benefit.

Chapter II
Technology Supports Early Learning

Three-year-old Nyasha clasped her hands and squealed with delight. Her friend was introducing her to the computer for the first time. He pressed the letter B key and animated characters moved across the screen. Nyasha squealed again and giggled. She pointed to the screen and said, "Ball!" Her friend pressed another letter key. The image changed again, adding to Nyasha's excitement as she began to comprehend the relationship of alphabet symbols to the pictures on the monitor.

Increasingly computers and other technologies are finding their way into early childhood settings and into the hands of very young learners. What part do computers play in early childhood education? What impact does technology have on the education of young children with disabilities, children of color, and children from low income families? Perhaps a more important question is: How can computers, how can *machines*, support educational goals of inclusion and increased self-esteem? There are at least four ways technology can foster both inclusion and self-esteem for young children with disabilities: self-expression, communication, interaction, and education.

Self-Expression

Julie was a three-year-old with autism. When she arrived at preschool, it was difficult for her teachers to learn about Julie because she was nonverbal and did not socialize with her classmates. Lack of language also made it difficult for Julie to express her needs and feelings. The teachers learned from Julie's parents that Julie enjoyed music. They recorded songs on a communication device and attached pictures and symbols to represent the songs. Julie willingly joined her classmates in a group and took turns making choices about which songs she would like to hear. Julie expressed her thoughts and feelings by making choices. In observing her choices, the teachers gained insight into Julie's likes and dislikes, giving them ideas for future learning activities.

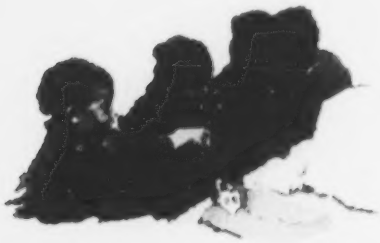
Technology provided a means of self-expression and supported early learning for Julie, including her in the everyday life of the classroom. The ability to make choices gave her some control over her learning environment. Together the two factors helped build Julie's confidence and self-esteem.

Communication

When Victoria was one-and-a-half years old, she was identified as being developmentally delayed in almost every area—especially language. Later, in her preschool classroom, all her attempts to communicate were valued and recognized as valid. Various communication devices as well as sign language were used to help her communicate. At home, Victoria was encouraged to use a computer with which she practiced listening to and identifying preschool vocabulary and enjoyed age-appropriate interactive stories.

Technology, in addition to parent and teacher interaction and support, gave Victoria several more ways to develop language skills. She learned to communicate effectively with her parents and teachers, and her most recent evaluations indicated significant gains in cognitive and communicative development. This was very clear when Victoria heard an animal sound, made the sign for "horse," and ran to pat her rocking horse.

Social Interaction



It was difficult for a classroom full of five-year-old children with significant language delays to sit still, take turns, speak softly, and listen while the teacher was talking. They needed a common interest around which they could interact appropriately while accomplishing their learning goals. The teacher accepted a computer for the classroom. Considering the kinesthetic needs of the students, she placed it on a high table, so the youngsters could stand to use the machine. Software selected to support curriculum concepts motivated the children to learn, as well as practice social skills, around the computer.

In this classroom, the computer supported appropriate social interaction among active young learners and provided a forum for them to develop life skills, including academic learning. Manipulating a computer mouse and pressing keys on the keyboard allowed the students to move their bodies while controlling what happened on the monitor. They practiced taking turns in pairs, used conversational language, and learned new vocabulary as they worked with various software programs.

Education

It was hard work for Antony to learn in his new preschool classroom. Sometimes his frustration led him to behave inappropriately toward the other children. Enticing computer programs motivated him to focus on learning and made it exciting for him. He was able to concentrate while he worked at the computer and has learned the skills necessary to attend kindergarten in the fall. His self-esteem and personal confidence increased markedly as he mastered new concepts and began to make new friends.

Outside research supports Antony's story. Many children with special learning needs demonstrate significant gains in both cognitive and social

abilities when technology is incorporated into their education (Haugland & Shade, 1994). Computers are very patient, nonjudgmental teachers that allow the child to control the rate of learning, to receive constructive feedback for mistakes, and to explore and discover at his or her own rate. Some programs record students' scores and offer new levels of challenge as skill levels are mastered. Well-chosen software can have a positive impact on the child's learning of academic concepts.

These vignettes illustrate how computer technology can support educational and individual goals for children with special needs. By using a carefully selected array of devices along with computer hardware and software, young children can express themselves, communicate effectively, learn appropriate ways to interact with one another, and begin to master academic concepts. All of these skills mesh to build confidence and positive self-esteem in children and to support their inclusion in the classroom and in life.

Benefits of Assistive Technology in Early Childhood Education

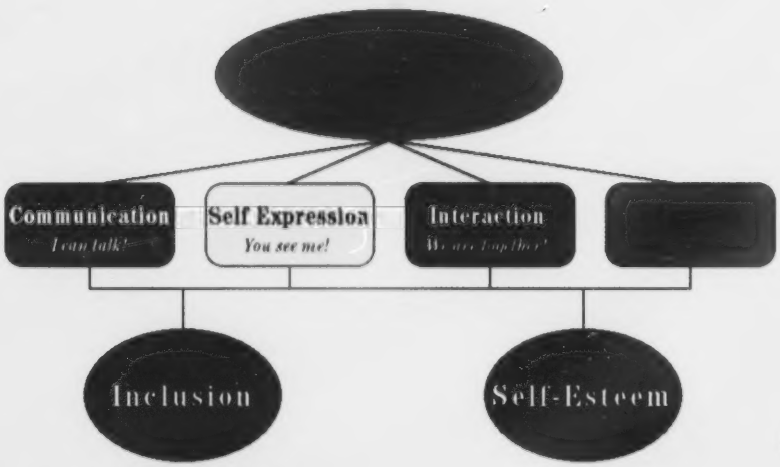


Figure 2.1

BEST COPY AVAILABLE

Chapter III
Assessing for Helpful Technology

Rafael was a five-year-old with cerebral palsy. He had very low muscle tone and did not speak. His parents were immigrants; Spanish was spoken in the home. Rafael's teachers believed that he had much to contribute in his family and classroom, but they needed to assess how they could help him have a successful preschool experience.

In its simplest form, educational assessment of young children is gathering the data necessary to develop informed assumptions about their capabilities, interests, and needs. Several methods may be implemented, but the purpose is to develop strategies to support the child's learning. Assessing for assistive technology involves a similar process.

Janet Armstrong (1993), early intervention assistive technology coordinator at Penn Tech, listed five beliefs about assessment for assistive technology:

- Assessment is an ongoing, continuous, and dynamic process involving many individuals.
- Assessment must include information from the child's family and other individuals who know the child well.
- Assessment should be done during natural routines and in natural environments.
- The purpose of assessment is to find alternative ways for a child to learn from, interact with, and control the environment.
- The goal of assessment is to determine the necessary features of assistive technology, not to identify a specific device.

Preparation for Life

Assessment involves many individuals. A team is assembled to build a strong scaffold of support for the child.

The team includes *professionals* who may provide expertise in various fields from a trained, educational perspective. *Parents* offer their viewpoints, sharing hopes and dreams for their child and giving insight to the child's behaviors in the home environment. The family may elect to invite a *representative* from its own culture to assist the family in the teaming process. A district *assistive technology specialist*, or someone familiar with the field of assistive technology, can provide valuable information when this is a potential aid for the child (See Part C information, Appendix C.). Other team members will be chosen based on the needs of the individual child.

Potential Team Members

- ☑ Parents
- ☑ Classroom Teacher
- ☑ Special Education Teacher
- ☑ Speech Language Pathologist
- ☑ Occupational Therapist
- ☑ Physical Therapist
- ☑ Cultural Representative
- ☑ Assistive Technologist
- ☑ Psychologist
- ☑ Building Administrator
- ☑ Representatives from other agencies

Figure 3.1

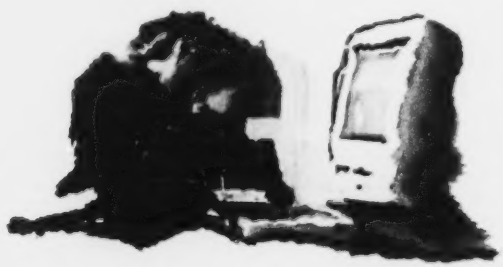
The first task of the team is to consider the child's future and develop long-range as well as short-range goals, based on the cultural values and preferences of the family. What do the parents want the child to do now, in elementary school, as a young adult? What are the cultural strengths that may be incorporated in the child's learning plan? What educational goals do teachers have for the child? This step is vital. The choices made now can help the child develop preparatory skills necessary for future successes. For example, if the team believes that the child will eventually benefit from a communication device, introducing a consistent symbol set on communication boards will help the child understand the relationships between symbols and communication now, as well as teach symbols that will be used on a device in the future.

In Rafael's instance, an aunt who had come to the United States several years earlier helped the professionals and family work together to plan for Rafael. Short-term goals of the team were that Rafael would have opportunities to learn, to communicate, to participate in typical family and classroom activities, and to develop strong self-esteem. The team believed that in the future Rafael would use a computer and a communication aid and they enlisted the assistance of a technology specialist.

The second task of the team is to determine the child's current skills and behaviors. The objective of this step is to discover what the child *can* do—his strengths. For a child with severe disabilities, a strength may be that he is able to control the movement of his left knee or the blink of his eyes. These capacities may provide the key to unlock the child's potential for communication and learning with assistive technology.

> *Rafael's teachers and the assistive technology specialist watched videotapes they had taken in class and noticed that he seemed to have some control of movement in his left foot. They also observed that he could focus his eyes on a given object for a period of time. Eye-gaze and foot control were potential strengths which could provide access to assistive technology. His ability to gaze could allow him to communicate via an eye-gaze communication display and the foot movement might be a way to access a switch.*

Bridging the Gap



Gaps between what the child does and what the child needs to do must be clearly identified. Which of the child's strengths can be built upon to bridge the gaps? What *features* of assistive technology might help? Considerations include motor capabilities, how the child

will be physically positioned, and how the equipment might be positioned for most effective access. If a computer is to be used, software appropriate for the child's needs and abilities will be selected as well as the most efficient access method for the child.

It is important to note that, at this step, only required *features* are identified, not particular devices. Matching the child's strengths and interests with characteristics of technology allows the team to consider the child first. Then the team can search for or adapt equipment with the features that best meet the needs of the child.

Rafael's teachers tried several ideas. They positioned a communication display with "yes" and "no" symbols on a slant board fastened to the tray of his wheelchair. When asked if he would like juice, Rafael gazed at "yes," clearly indicating his choice. Later, they mounted a switch to the left foot rest of the wheel chair. When Rafael wanted to participate in classroom activities he pressed the switch with his foot to activate a communication device to say, "My turn, please." The team began to learn more about switch access and eye-gaze technology to evaluate options for his future technology use.

Figure 3.2 Rafael's first communication display. (Symbols from Mayer-Johnson.)

Identifying the Tools

Technology provides some of the tools necessary to allow children with disabilities to play, learn, and control their worlds. In identifying appropriate tools for an individual child, it is important to remember to "determine the necessary features of assistive technology; not to identify a specific device," (Armstrong, 1993). There are several reasons for this:

1) Children tend to outgrow adaptive devices as quickly as they outgrow shoes, but they continue to need similar features;

BEST COPY AVAILABLE

2) Identifying features rather than devices allows for experimentation with a variety of devices in order to select the one that works best for the individual child;
3) When seeking funding, support for a particular device can be based on specific data showing that options with similar features have been thoroughly investigated.

A rule of thumb is to begin with the simplest effective device and then allow the child to progress. An example is the story of a four-year-old with multiple disabilities, including hearing loss and speech delay, who learned to press a single-message recordable switch to say, "Please may I have a drink?" Consistent use at school and at home helped the child realize the power of communication. He quickly mastered a four-message communication aid and within a short time graduated to a more sophisticated device enabling him to make known his needs and ideas quite effectively. Because the team had identified the *features* needed by this child, (an easily recorded, portable device, for both home and school) several pieces of equipment could be utilized to meet the child's changing needs.

An Ongoing Process

As in the preceding example, the cycle of planning, assessing, experimenting, and adjusting must be a continuing process. All members of the team need to be continuously aware of growth and changes in the child's capabilities, interests, and needs. The team working with Rafael discovered the same principle.

A team member realized that some of Rafael's fingers had gained strength and provided more reliable movement than his foot. A pressure sensitive switch was placed on his wheel chair tray and Rafael learned to interact with computer software by touching the switch. Team members, including his parents, gained new insights about his abilities and interests, and he began to be an enthusiastic

participant rather than a silent observer in the classroom. Given the right tools, Rafael demonstrated progress toward meeting his goals.

Parents and professionals often search for an easy answer to the question "What assistive device will be exactly right for this child?" There are no simple answers. The support team will seek "alternative ways for the child to learn from, interact with, and control the environment," (Armstrong, 1993). In summary, assistive technology can provide the alternative means, by planning with the future in mind; building on the child's strengths; identifying features of appropriate tools; bridging the gap between what the child can do and what she needs to do; and experimenting until a match is made. Then the process will need to be repeated as needed as the child grows and changes.

Team Tasks in Assessment

STEP	OBJECTIVES	QUESTIONS TO ASK
Plan	*Dream. *Write long- and short-term goals.	What do parents want the child to do now? In 5 years? In 10 years? What goals do the teachers have for the child?
Assess	*Identify child's strengths. *Identify barriers to participation, communication, and independence.	What strengths does the child have? How might the strengths provide access to helpful technology? Who might help match technology to the child's strengths?
Experiment	*Identify tools that match the child's strengths. *Identify tools to bridge the gaps.	What features does the child need-- access, output, portability, etc.? How can the team acquire options to try with the child?
Adjust	*Keep up with the child's changing needs. *Provide tools to meet those needs.	Do these features still meet the child's needs? Does this device still meet the child's needs? What might work better? How can we get it?

Figure 3.3 Process of Assessing for Assistive Technology

BEST COPY AVAILABLE

Chapter IV
Choosing Computer Technology for the Classroom

An early childhood classroom received a donated computer. The teacher immediately began to use it for administrative tasks, but also wanted to make it available to the children she served. She purchased software for the computer and moved the unit into the classroom. Some of the children needed direct access, so she tried unsuccessfully to attach a touch screen. Despite repeated efforts and numerous calls to the computer manufacturer's technology support line, that computer was not suitable for her classroom and she moved it back into her office space.

Early childhood programs acquire assistive technology in a variety of ways. Some purchase equipment through grants from local corporations or philanthropic groups. Some use state or district money to apply toward technology purchases. A few have technology budgets.

Despite how computers and assistive technology are acquired by an early learning center, forethought and planning are needed to tap their greatest potential. While many sites acquire computers, then search for software and peripherals to accompany them, the following method is strongly recommended. Four steps should be followed prior to spending the funds required to purchase a computer.

Stating Objectives

The first step in purchasing technology for the classroom involves a) knowing the curriculum, b) understanding the children, and c) having a firm grasp on the objectives for both. Teachers categorize curricular objectives into academic, social, and personal skills areas. They list goals such as to recognize and name colors; to recognize and name numbers; to count up to ten objects; to recite the alphabet; to write first names; to take turns; or to follow directions. Individual objectives for a young child with disabilities might include improved eye gaze, increased finger strength, cooperating with a friend, greeting the teacher, or pointing.

Best practice in early childhood education requires that *curricular objectives* and *individual child objectives* guide the curriculum and the school day. (See Chapter 6 for discussion of objectives.) Objectives for the classroom and the children also dictate decisions related to the acquisition of appropriate computers, software, and assistive devices. Developing a master list of curricular and child objectives will help professionals focus on specific needs of the classroom as they consider software and peripheral devices.

Searching for Software

After outlining objectives for the classroom and children, a teacher will find helpful information in software catalogues, assistive technology newsletters, and technology columns in educational publications. Reading reviews, visiting computer stores, and experimenting with potential pieces of software are valuable experiences. A checklist of software features to consider may be helpful. (See Appendix B.)

Hardware — the computer components including the central processing unit and the monitor, disk drive, keyboard, and mouse.

Software — the electronic instructions that tell a computer what to do. Software is to computers as records are to stereos.

Figure 4.1

The first requirement in selecting software is to be sure that it *meets objectives* for the curriculum and/or for individual children.

BEST COPY AVAILABLE

The second criterion is to ascertain whether the program is *developmentally appropriate* for the children involved. Also consider whether the software is *socially appropriate* for older children at younger developmental stages and is appropriate with respect to *culture and gender.* Children of all cultures should feel comfortable working within the environment of the software. Open-ended software, which allows children to create, draw, or write, is most versatile because it spans genders, cultures, and ages, and appeals to a wide variety of interests.

Selecting Software

- ❑ Does it meet objectives?
- ❑ Does it demonstrate developmental, social, cultural, and gender appropriateness?
- ❑ Is it educationally sound?
- ❑ Does it allow control by the child?
- ❑ Is it easy to use?
- ❑ Is technical support available?
- ❑ Does it pass a kid-test or role play?

Figure 4.2

An important consideration is *educational soundness.* Are concepts presented accurately? Are letters and numbers formed correctly? Do graphics, sound, and other technical features reinforce, or at least support the concept? Is feedback appropriate? In one math drill and practice program, animated dinosaurs danced upon completion of a set of equations. This reinforcement occurred whether equations were completed correctly or not. In this instance, the software was not educationally sound.

Children who have some control over their own learning environments exhibit greater self-esteem and are more willing to take risks (Beaty, 1992). For this reason, *control by the child* is an important feature of excellent software. Some software is designed so the adult can adjust various settings to adapt to an individual child's capabilities.

Ease of use is key to the success of a piece of software in the classroom. A difficult program will probably be little used. Having stated this, some programs may appear impossible to use at first, but with a few tips from a more experienced user are well worth the effort to master.

Before purchasing any software, be sure that it lists a toll-free phone number or an on-line address for *technical support*. It is a good idea to check the availability of actual assistance at the end of the line. Ask questions about the program you have in mind and request pointers for learning it quickly and easily.

With these considerations and objectives in mind, applicable programs can be selected with confidence. It is wise to spend time with the software in order to fully understand the program's capabilities and uses and to critique its value. An effective way to do this is to role-play various children who might use the software. Visualize how each one might need to access the software and how they might learn from it. Adults who take this time tend to adapt and implement the software most effectively and to develop creative ways to use it with children.

Selecting Peripherals

After the curricular objectives and individual child objectives are clear and appropriate software has been chosen, it is time to consider peripherals. Peripherals are devices that attach to the computer. Frequently they are input devices such as trackballs, touch screens, or alternative keyboards, or output devices such as printers or Braille embossers.

Peripheral Devices
Devices which are connected to a computer, usually for input, output, or storage. Includes printers, external drives, scanners, Braile embossers, etc.

Figure 4.3

Any peripheral must also serve the curricular or individual child objectives. For example, if an objective is that the children will prepare art work, or write, illustrate, and publish their own books, then a printer to support the chosen software would be an appropriate peripheral. If an objective for a child with language and motor difficulties is that she will know color names, then a switch or an alternative keyboard might allow her to demonstrate her knowledge.

In selecting peripherals, it is vital to ascertain how efficiently they connect with various brands of computers. Three questions warrant a phone call to

BEST COPY AVAILABLE

the developer of the device: "With which computer does your product work best?"; "Are there any difficulties in working with the newer computers?" and "Has your product been tested with Brand X?" A teacher purchased a state-of-the-art computer and a very expensive communication device for comprehensive speech and language assessments. Independently each performed well. She was unable to make the two work together, however, despite the fact that the communication device could also serve as an alternative computer keyboard. Many calls for technical support led to more questions than answers. Knowing the answers to the above questions *before* purchasing a computer can save both time and frustration.

Other issues to consider for peripherals include how easy they are to use once they are connected to a computer and whether technical support is available. Colleagues or family members who use the devices are the best references to consult. Reviews in educational magazines or technology journals may also offer insight.

Securing a Computer

After the objectives are clear, software has been located, and peripherals are identified, the final step is choosing a computer. The computer should easily connect with the peripherals. It should have adequate desktop memory and storage capacity, sound and video capabilities, and CD-ROM drive. Teachers often ask, "How much memory is adequate?" The answer is, "Enough to operate the software you plan to use, plus a bit more to accommodate new software." This is one important reason to follow the step outlined. Look for system requirements on the software packages and select the computer accordingly. A color monitor is also essential to operate software designed for young children.

Effective Planning

1. State objectives.
2. Search for software.
3. Select peripherals.
4. Secure a computer.

Figure 4.4

Above all, the computer must be user-friendly, and easy to operate, install software, troubleshoot, and attach additional devices. The teacher in the vignette at the beginning of this chapter understood that following these steps — beginning with objectives, then selecting appropriate software, peripheral devices, and finally a computer — is the most effective method for choosing computer technology for the classroom. Approached in this way, technology can prove an effective tool to help meet curricular and individual child objectives.

Skills/Objectives for Early Childhood Education

Curricular Objectives

written expression
sound/symbol
letter recognition
sound blending
left-right orientation
number recognition
number concepts
letter formation
cause/effect
shapes
size
1:1 correspondence
colors
language/vocabulary
prepositions
sequencing
visual perception/discrimination
categorizing
art
money
matching
science
calendar
comprehension
memory
counting
greater/lesser
following directions
body parts
letter sequence
counting
classification
hand-eye coordination

Individual Child Objectives

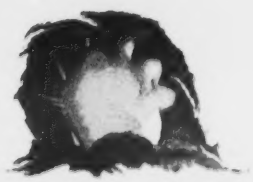
communication
fine motor
attending
social interaction
turn-taking
values
purposeful movement
strength
feeding
make choices
potty training
independence
risk-taking
body control
gross motor
scanning/eye gaze
cause/effect
problem solving
personal skills
social skills
self-advocacy
self-esteem
access to technology
management
verbal response
communicate needs
dexterity
humor
self-help

Figure 4.5 Objectives collected from ECE teachers by Project KITE

Chapter V
Introducing Other Devices

Young children with special needs may require assistive technology to participate in the activities of their classrooms or families. A variety of devices enable children to use a computer for learning, to express themselves through art or music, to build language and speech skills, to communicate their needs, desires and ideas, and to play or interact with others. This chapter describes some of the devices available to help young children who need special access.

Pointing Options



Newer software programs have a graphic user interface (GUI) and usually require the use of a *mouse* for access. Children interact with the programs by moving a mouse which in turn moves a *cursor* (pointer) across the computer screen. They make choices by positioning the cursor on one of the targets displayed on the screen and pressing the mouse button to select it.

Some young children use a mouse very effectively, while others have difficulty moving it, understanding its relationship to the cursor on the screen, or switching their attention between the mouse and the screen.

- *Trackball*
  If moving the mouse on a mouse pad is too difficult, an alternative is a trackball. A trackball remains stationary while the child moves the ball with a finger, toe, chin, or other means. Young children

have better control using trackballs with larger balls. Some trackballs have buttons that can be defined to best suit the needs of the child. For example, one button might be set to lock down so that the child does not have to simultaneously hold the button down while moving the mouse, actions often required to draw or move an object from one place on the screen to another. It is also possible to coordinate cursor speed with trackball movement to accommodate the child's motor control. In addition, a guard can be fashioned to support the palm of the hand while the child moves the ball and presses the buttons.

- *Mouse Keys*
  The Macintosh system software contains a feature called Mouse Keys which lets the numeric keypad perform all of the mouse functions. For example, pressing the 2 key moves the cursor down, the 4 key moves it to the left and the 8 key moves the cursor up. The key in the middle (5) serves as the mouse click. Stickers with arrow symbols can be used on the keypad to give access to children who can press keys. Access Utility for Windows and Access DOS include a similar function for IBM/compatible computers.

- *Touch screen*
  Another popular and effective input device for children is a transparent touch screen. Some touch screens are mounted over the monitor while others are imbedded in it. Children activate choices by touching pictures or words on the screen with their finger or a substitute pointing device. Touch screens are particularly effective for children who have difficulty switching their attention from the keyboard or mouse to the monitor or who require a direct means of selection for other reasons. Using a touch screen on an Apple or older MS-DOS computer requires software

that recognizes it. Nearly all of the newer, mouse-driven software work well with touch screens.

- *Drawing tablets*
  Drawing tablets let the child draw with a stylus on an electronic pad much like using crayons or markers on paper. They are generally used with drawing programs and help children express themselves through art.

- *Electronic pointing devices*
  Electronic pointing devices, which use ultrasound or an infrared beam to move the cursor on the screen, also offer access. A child who needs to operate a computer without hands, but has reliable head or eye control, may be a candidate for such a device.

Keyboard Modifications

Many young children operate regular computer *keyboards* surprisingly well. Small keys, standard typewriter layout (also referred to as "qwerty"), and labeling of keys may not present a problem. Other children, however, are confused by many keys, have difficulty seeing the small letters, or are unable to press one key without pressing several others. Teachers can modify keyboards in several ways to help children access computers.

- Put bright *stickers* on frequently used keys (e.g. space, return, arrow keys).
- Set aside the keyboard when using programs that use only the mouse for input.
- Cover the keyboard with a piece of a cardboard in which holes reveal only the keys the children need. As they become accustomed to using the keys, add more holes and introduce additional keys.
- Use a *moisture guard*, a skin-like transparent plastic covering, that

fits snugly over the keyboard. Fasten brightly colored stickers over the keys to be used, or buy *key labels* at a stationary store. The labels include letters and numbers in bold print and/or on contrasting backgrounds for clearer visibility. They are also available in Braille.

- Support the child's hand and prevent unwanted keystrokes with a *keyguard*, a sturdy frame which fits on top of the keyboard and has holes corresponding to each key.
- Change the way keys behave by slowing down features such as key repeat and key speed in the *keyboard control panel* of the system software.

Alternative Keyboards

The standard keyboard can be replaced or combined with a keyboard which has the features the children need.

- *IntelliKeys* is a reasonably-priced keyboard with a great deal of flexibility. The same keyboard with different cables can be used with Apple, Macintosh, or IBM/compatible computers. Seven bar-coded overlays with arrow keys, numbers, alphabet, and standard keyboard layouts are included. Response rates, repeat features, and other options can be selected for the child by using the setup overlay. In addition, custom overlays can be created with companion software called Overlay Maker.

- *Ke:nx* is a combination of software and a hardware interface that allows various input devices to communicate with Macintosh computers. Key Largo is a child-friendly keyboard that plugs into a Macintosh equipped with Ke:nx. The portable version, Ke:nx On Board, incorporates Ke:nx with a Powerbook computer. With Ke:nx, a device such as a TouchTalker can be used as a computer

keyboard in addition to serving as the child's communication device. Ke:nx also has features such as speech capability for words and letters that are typed, scanning options for switch use, and an on-screen keyboard to use with pointing devices. The new DiscoverBoard combines Ke:nx keyboard features in a simple-to-attach keyboard. Like IntelliKeys, it comes with basic overlays, and custom overlays can be created. Both keyboards help children with vision impairments and others who need larger target areas. These alternative keyboards can be connected together with the regular keyboard and mouse in cooperative learning activities for children of varying abilities.

- *DADA Entry* and *Darci TOO!* are interfaces which provide functions similar to Ke:nx for IBM and compatible computers.

Switch Technology

Switches come in all shapes and sizes. There are switches to push, pull, squeeze, blow, bend, talk to, or blink at. Some are durable and appropriate for children with forceful actions, while others respond to very light touch. Switches may be activated by any movement a child can control: hand, foot, head, or other body part. Placing a switch in a location where the child can activate it easily while focusing on the desired result is very important. Mounting devices enable the placement of switches in any position convenient for the child.

Switches used with battery-operated toys enable children to make choices, participate in classroom and family activities, explore their environments, and learn and demonstrate that learning. They also enable the inclusion of children with physical disabilities in childhood activities such as squirting water, racing cars, rolling dice for board games, and playing with other toys. With a switch and a special control unit, a child can safely use electrical appliances such as a slide projector, television set, popcorn popper, toaster, or lamp, offering a measure of control over the environ-

ment and even the ability to assist with household chores. When a latching device is attached to a switch, the first switch press causes an action to begin and a second press stops it. A switch with a timer can continue an activity for a preset time, such as when blending ingredients for a milkshake.

A battery-operated toy or appliance is easily adapted for a switch user. A battery adapter (a wire with two copper disks soldered to one end and a switch plug soldered to the other) is inserted into the battery casing where the battery makes contact with the toy. A switch jack is inserted into the plug end. When the toy is turned on, the adapter disables the toy until the switch is pressed. For further flexibility, creativity, and economy, switches and battery adapters can be homemade in sizes corresponding to battery sizes with a soldering iron and parts from an electronics store.

Some switches speak. The BIGmack™ switch can activate a toy and respond with a single recorded message. Switches can be used with some communication devices.

Switches can operate computers. Two things are required when a youngster uses a switch to interact with a computer.

- The first is an interface device into which the switch can be plugged. The devices range from simple interfaces such as the Macintosh Switch Interface and DJ PC Switch Interface to those that combine switch input with other means of input. The Switch-Adapted Mouse (SAM™) is a trackball with three switch jacks corresponding to its three buttons. The IntelliKeys keyboard has two switch jacks to enable switch interaction with software and the keyboard itself can function as one or two switches. SAM and IntelliKeys are available for both Macintosh and Windows computers.

- The second requirement is software programs that recognize the switch signal. Children often begin with software designed to help

them understand cause and effect. For example, a switch press may cause sound or graphics on the screen to change or a storybook program to advance from one page to the next. After mastering cause and effect, children learn to press a switch to make deliberate selections as choices are highlighted (scanned) one at a time.

Developers have produced user-friendly tools to make other software programs work with switches. CrossScanner substitutes a horizontal line for the cursor. The line moves from the top to the bottom of the screen and the child presses the switch when the line crosses the target. CrossScanner then moves a vertical line from the left to the right of the screen and a second switch press identifies the child's choice. ClickIt! is software that allows the teacher or parent to define scanning areas for software programs without built-in scanning options. CrossScanner and ClickIt! are available for Macintosh and Windows computers. Ke:nx and Discover:Switch are hardware options for comprehensive switch use with Macintosh, and DADA Entry and Darci Too! are for IBM/compatible computers.

Switch software programs offer many possibilities for learning. Some of the programs that are popular with professionals and youngsters who use switches are listed in Appendix B.

Augmentative and Alternative Communication

"Augmentative and alternative communication (AAC) refers to a set of approaches used to improve the communication skills of persons who do not speak or whose speech is not intelligible. Although the terms augmentative and alternative are often linked, there is a slight difference in meaning. Augmentative communication approaches are used to supplement, enhance, or support the communication process for persons who have some speaking skills; alternative approaches replace speech as a means of communication" (Lewis, 1993).

Using techniques that support communication for a child who is functionally nonspeaking helps develop language and may improve or enhance

speech capability. They include pointing to pictures, objects or symbols, sign language, body language, and eye-gazing. For some children AAC also includes the use of assistive technology such as switches, communication devices, and computers.

Although AAC generally targets those who do not speak, all children benefit from multiple communication strategies including those who speak but cannot be understood and those who have difficulty expressing themselves. It is vital for children to be able to indicate their likes, dislikes, needs, ideas, and feelings and to be understood by their parents, siblings, peers, teachers, and members of the community. It is also important for children to learn the social skills of taking turns, listening, calling for attention, and requesting an object, action, or event. All of these skills can be aided by AAC.

Effective practices for teaching children to communicate

Linda Benton (NCIP, 1996), technology coordinator of Early Childhood Education Center in Albany, New York, wrote, "What we find most beneficial for young nonverbal children with disabilities is a total communication approach in the classroom during all activities, implemented by all staff. This includes signing, speaking, and using picture symbols on manual communication boards, concept boards, transition boards, song boards, storyboards, and for labeling in the classroom and on simple voice output devices."

Children need a safe and encouraging place to learn, practice, and experiment with various forms of communication, including augmentative devices. Teachers, service providers, and parents need to work together to find the best solution for the child. Ongoing evaluation is necessary to set goals based on the child's changing communication needs, capabilities, interests, and experiences and to expand the child's vocabulary base.

Teachers or parents who need to find ways of communicating with a child are encouraged to *start with what they know and have on hand*. Using or making simple aids will give the child early exposure to communication and will help determine the most effective tools for the child. At first, choose vocabulary that helps the child to indicate his or her preferences and urgent needs ("Yes, I want it," "No," "I'm hungry," "I'm thirsty") and move on to words and phrases for interactive, enjoyable activities ("1, 2, 3, Go!"). Build on words the child understands. Adults need to model use of the device by pointing to the symbols while speaking, and then give the child many opportunities to use the device over a period of time. Additional occasions for inclusion may take place as classmates and siblings also use the device(s).

The goals are for children to communicate frequently with adults and peers, responding to questions, asking questions, and letting others know what is on their minds. Adults need to discover the best way for the child to access the greatest number of messages in the least amount of time with the least amount of effort.

Pointing to photos, drawings, or symbols from one of several widely used symbol sets on a communication display (e.g. board, book, vest) is a low tech way for a child to deliver a message. A child who is unable to point can designate choices by eye gazing or directing a focused light at a selected symbol. A child using a switch might activate a revolving dial on a battery-operated clock communicator or cause a toy fireman to climb up his ladder to point to symbols attached to these devices. These methods require the close attention of a communication partner.

In their book, *Engineering the Preschool Classroom*, Goossens', Crain and Elder suggest activity-based communication displays for individual children who need them. Teachers target frequently-used, motivating activities, and develop a list of 36 pertinent words or phrases, rank them in order of importance, and choose symbols for each. The symbols are arranged on a template from which an individual display is tailored for each

33

nonspeaking child. One child, for example, may use only the four most important symbols from the message pool, while another may be capable of using a display with 20 choices. More symbols are added as the child's communication skills increase. In addition to its flexibility, this method transfers easily to electronic talking devices as the child progresses (Goosens', *et al.*, 1995).

Food Preparation- Primarily Word-Based

1. Let me	13. Careful	25. Burn
2. More	14. Finished	26. Hurry
3. Get	15. Turn on	27. Set the timer
4. Open	16. Turn off	28. Cold
5. Put in	17. Hot	29. Cook
6. Stir	18. Look	30. Cut
7. No, don't	19. Smell	31. Where?
8. Yuckie	20. Pour	32. What?
9. Uh Oh	21. Make	33. When?
10. Taste	22. Spill	34. Please
11. Take out	23. Bowl	35. Spread
12. Good	24. Spoon	36. Close

Figure 5.1 Food Preparation message list from Goossens', Crain & Elder (1995)

Figure 5.2 Symbols arranged on communication display for child using 12 messages. Picture Communication Symbols ©1981-1997 Mayer-Johnson Co. Used with permission.

Simple *voice output communication aids (VOCA)* hold great promise for young children with language impairments. Some devices offer *digitized speech* or voice messages which are recorded and played back. Words or phrases are easily and quickly recorded in any spoken language by an adult or, preferably, by a child similar in age, gender, and culture. Other devices are programmed to speak with *synthesized speech.*

These "talking devices" offering a varying number of messages give the child the opportunity to make choices or communicate in several settings. When used with the picture symbols described above, the child can touch the symbol, hear the word or phrase spoken, and receive appropriate response from others. This reinforces language through visual, auditory, and sensory means. A child may participate more fully in reading, ("turn the page") or on the playground ("I want to swing"), or in the pet corner ("let me feed the rabbit") when a device is prepared for various activities.

Communication displays and devices enable children to be included and heard in classroom and family activities. They also assist parents and professionals in understanding their children. Adults frequently anticipate what young children want or need and provide it for them before children ask. This is understandable and may save time in the short term, but it promotes dependence in the child. The ability to communicate offers a child some control over the environment and builds self-esteem.

Considerations in choosing a talking device

The *type and quality of speech* are very important in choosing a talking device. Two types of speech are currently available.

Choosing a Talking Device

- Speech Quality
- Accessibility
- Durability
- Portability
- Flexibility

Figure 5.3

Children with hearing impairments often benefit from the robotic sounding *synthesized speech* because it is consistent in pronunciation, pitch, and rate of speaking. Synthesized speech is machine-generated and requires less memory than recorded human speech, a consideration for youngsters who

need many messages or a large vocabulary. The Wolf, LightTalker, and TouchTalker are examples of devices with synthesized speech which have been used effectively in early childhood settings.

Although *digitized* (recorded) *speech* requires more memory and thus limits the number of messages the device can provide, teachers and parents appreciate its ease of use. It is possible for messages and overlays to be quickly changed as the child moves from one activity to another. In addition, devices with digitized capability enable the child to sing along and make sounds and noises that are difficult with synthesized speech. The Hawk, SpeakEasy, Parrot, AlphaTalker and TalkPad are examples of devices with digitized speech. (See Appendix B.)

The *quality of speech* varies with both types of devices. In general, the best speech quality commands the highest price, but there are exceptions to the rule. Experimenting with a variety of devices and comparing features and costs are recommended.

Consideration of the *access method* needed by the child is crucial in selecting an appropriate device. For the child who can point, target areas must be large enough and sensitive enough to respond. If a child requires a switch or light pointer for access, a device that accepts such a signal is needed. *Mounting* the device on a wheelchair or walker may be necessary. Again, select the means of access that will enable the child to produce the most messages, in the least amount of time, with the least amount of effort.

Because early childhood classrooms have active children, hard floors, and sand tables, devices used with young children must have exceptional *durability. Portability* should also be considered for children who move from one space to another for various activities.

Flexibility is another factor. Some devices can be prepared with a small number of messages at first and later reconfigured for more as the child demonstrates mastery. As the child becomes more proficient in using a device, the number of possible responses and/or the number of minutes of speech may need to be increased. It is sometimes possible to purchase additional features for a device rather than to buy another.

A variety of devices is available to enable young children to play with toys, to turn appliances on and off, to assist them with communication, and to open avenues of access to computers. The devices described in this chapter do not constitute an exhaustive list. However, a selection of equipment has been described to make the reader aware of the types of tools currently available for young children with special needs.

Chapter VI
Integrating Technology into the Early Childhood Classroom

Early childhood professionals, including early childhood special educators, have myriad responsibilities. When presented with the idea of implementing technology in their classrooms, they may feel overwhelmed. However, technology is not another subject to be taught (although some teaching will need to be done). It is rather a tool in the teaching-learning process which will necessitate increased use in the early childhood classroom as teachers prepare children for the 21st century.

Assistive technology includes computers and related peripherals, switches and switch-adapted toys or appliances, communication devices, and other adaptations. The purpose of assistive technology is to allow a child access to the curriculum and inclusion in the life of the family or the classroom, and to break down barriers to participation, communication, control, and independence.

These new tools are to mesh with tools and methods that are already in place. The challenge for the teacher is to learn to use the equipment and then find creative ways to integrate it into an existing framework of lesson design, classroom activities, and administrative tasks.

Designing Lessons with Technology

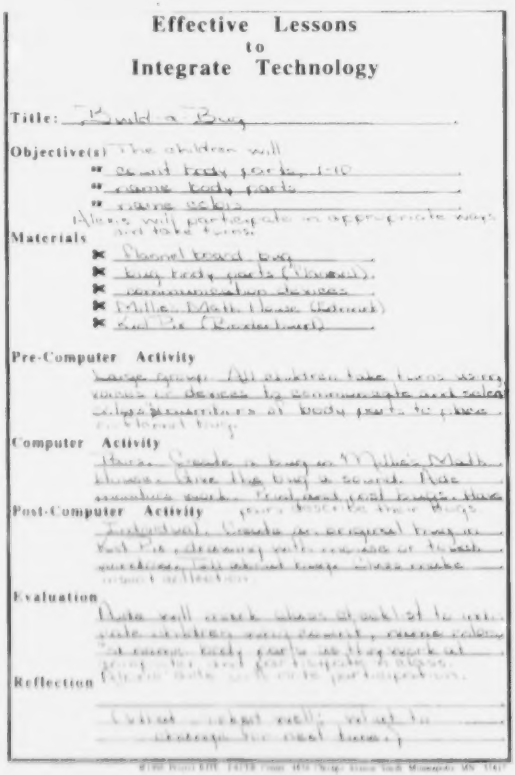
Technology is most effective when it is integrated into the existing curriculum and lifestyle of the classroom rather than added as something extra. A child's communication device, for example, should be programmed to accommodate activities in all of her natural environments. Communication displays can be placed strategically in each classroom activity center to enable the child to point or gaze at symbols which would allow her to interact with others involved in the activity. A computer could be an integral part of a lesson to teach a new concept or reinforce concepts previously discussed. Existing lesson plans are not discarded, just adapted to integrate new ways of teaching.
In addition, when wearing their "classroom administrator" hats, teachers can write and edit lesson plans or correspondence in a word processor on the computer, then print or save on disk for future refinement and use.

When planning to use assistive technology in the curriculum, a teacher begins by identifying the *objectives* to be met just as in writing any lesson plan. The objectives relate to overall curricular goals for the theme or unit. Additional skill or behavioral objectives may be included for individual children in the class. In the vignette at the beginning of Chapter 1, Stacey's objectives included reinforcing the concepts of circle, square, rectangle, and triangle which had been introduced earlier in a variety of ways. She also prepared individual objectives for Bekah and integrated them into the class activity. (Refer to Figure 4.5 for other sample objectives.)

When writing the lesson plan, *evaluation* techniques should be identified immediately after selecting objectives, even though they will be used toward the end of the teaching sequence. All evaluation must clearly reflect the established goals and objectives of the teaching/learning process and be as authentic to the child's experience as possible. Authentic assessment allows the children to demonstrate what they have learned in

a true to life, age-and-ability-appropriate way. Technology and assistive devices may be incorporated in the evaluation process to ascertain whether outcomes were achieved. If a communication device is part of the child's regular functioning, for example, the device should be used during evaluation in order to allow him to accurately demonstrate his learning. On the computer, a child may be asked to listen for a spoken vocabulary word and select the picture that matches that word. Some computer software records a child's responses and prints a summary.

With any new concept, an *introductory* activity is necessary to help the learners focus on the concept, relate it to previous knowledge, and begin to develop an understanding of the new learning. Best practice then builds and clarifies the new concept, offers practice to apply the learning in isolation, and finally incorporates the new concept with old learning for differentiation and more practice. A wide variety of teaching techniques can be used at each stage of the process. Technology can augment the arsenal of teaching techniques available to the teacher for introducing, reinforcing, practicing, or enriching learning. Each of these stages can be noted in the Bug Activity shown in Figure 6.1.



Effective Lessons to Integrate Technology

Title: Build a Bug

Objective(s) The children will

- count body parts, 1-10
- name body parts
- name colors

Aliens will participate in appropriate ways and take turns.

Materials

- Flannel board bug
- bug body parts (Aliens)
- communication devices
- Adlib, Boardmaker, Mouse Materials
- Dot Pic (Enrichment)

Pre-Computer Activity

Large group: All children take turns using communication devices to communicate next color, appendages or body part to place on flannel bug.

Computer Activity

Mouse: Create a bug on Millie's Math House. Have the bug count. Make another bug. Print out your bugs. Have

Post-Computer Activity your bugs be their bugs. Independent: Create an original bug on Dot Pic, discovering with mouse or touch overlay. Tell about bugs. Have make

Evaluation

Aliens will count their bugs at the correct number, identify body parts, name colors, [illegible] body parts as they work at [illegible] Dot Pic to create a bug.

Reflection

[illegible] participation.

What worked well? What to change for next time?

Figure 6.1

While technology can be effective in any stage of the lesson design, the introductory activity(ies) may be thought of as *pre-computer activity(ies)*. This beginning will be followed by *computer activity* during which the

BEST COPY AVAILABLE

children will gain understanding of the concept through hands-on use of the computer. A follow-up, or *post-computer activity*, will reinforce objectives and cement learning for the children. These three steps may occur in one lesson, or as multiple lessons spread over several days.

Reflection on the teaching-learning process is an important but often overlooked step in good lesson design. After a lesson is completed, the teacher can return to the word processor and quickly edit and add notes for the next time the activity is used. (See Appendix B for reproducible lesson plan format.)

Inclusion in Classroom Routine

Including children with multiple disabilities in classroom activities or at home continues to be a challenge. Integrating technology in new ways may not solve all the challenges. However, the following example of using assistive technology for inclusion may be helpful.

Individual child objectives

Bobby had cerebral palsy and low muscle tone. He experienced frequent seizures and was non-verbal. He attended a typical pre-kindergarten class in which the teachers determined that a switch was his most reliable means of access to activities. An individual goal for Bobby was to practice sequencing, so that he would understand and begin to take responsibility for daily routines. When designing lessons and writing objectives for the class, Bobby's teacher considered his individual objectives and supported them within the total learning process.

In a class cooking activity the group followed a recipe printed on a poster. They "read" rebus directions, took turns adding ingredients, and observed changes as various ingredients were added. As the children progressed through the steps in the recipe, Bobby pressed a switch attached to a clock scanner with pictures to match the rebus drawings. He directed which step came first, which was second, and so on.

Inclusion, not isolation in a group

In the above activity Bobby was part of the class and participated by directing the sequence of steps. He was included, but the teacher felt that he was still isolated. As she reflected on the success of the lesson, she realized two things. Bobby was the only person in the class who used the clock scanner. He was still different from the other kids. Bobby was included in the activity but he still was not able to participate in the fun part—stirring the batter.

For the next cooking activity, the switch passed from child to child, giving all the children turns to use the clock scanner. In this way, Bobby was not isolated, but one of the group. In addition, the teacher connected a switch to a control unit that allowed Bobby to activate a blender. He was delighted to help with the mixing. He had been given access to the curriculum, he was working on his individual objectives, and he was included with the rest of the children.

Integration of technology in the early childhood classroom can foster inclusion of children with special needs, but it takes planning. Objectives related to the curriculum and objectives related to specific children in the group must be addressed first. Then the classroom teacher and service providers need to discern ways to make the two sets of objectives mesh within the daily routine of the classroom. They will also find creative ways to use technology as a tool to help children reach their goals and decide how to evaluate whether the objectives have been met.

Technology for Teachers' Administrative Tasks

Many teachers report that a computer saves time in completing administrative tasks.

- Write lesson plans in a word processor on the computer, and print or save on disk for future use and modification.
- After a lesson is completed, return to the word processor and quickly edit and add notes for the next time the activity is used.
- Write and file IEPs.
- Write and edit papers for continuing education classes.
- Record anecdotal records.
- Develop parent newsletters.
- Write grants for technology in the classroom.
- Create handouts for the children.
- Network by electronic mail with other professionals who can share expertise in various areas.
- Find information on many disabilities and cultures available on-line through databases found via the Internet.
- Keep track of meetings and activities on a computer calendar.
- Create communication displays and labels for materials and areas of the classroom.

Technology offers teachers new and exciting ways to accomplish familiar goals and tasks in teaching. Integrating computers and other devices, including assistive technology, in the daily life of the classroom can save valuable time for teachers, include all children, and facilitate the teaching/learning process.

Ten Principles of Technology Integration

1. **Start with the curriculum, not the technology.** The needs of individual students and the curriculum designed to meet those needs should drive the selection of technologies and the ways in which they are used.
2. Take advantage of the motivational value of technology, but **don't limit its use** to that of a reward or a leisure time activity. Technology has too much value as a teaching tool to ignore its use in instruction.
3. **Use technology to reinforce skills taught by the teacher.** Technology can present guided practice activities, monitor students' responses, and provide students with immediate feedback.
4. Select technology activities that **match the goals of instruction and the skill levels of individual students**. No matter how dazzling the technology or how superb the instructional strategy, teaching an irrelevant skill is a waste of time.
5. **Take advantage of the customization options** that some technologies offer. Features such as the ability to control content and instructional parameters make it easier to adapt learning activities to students' needs.
6. **Monitor students' work** at the computer or with other technologies with the same diligence used to monitor other types of classroom work. If performance data are collected by the technology, use that information in making instructional decisions.
7. **Use technology to present new information** to students. Although technology is certainly not the only instructional strategy available for this purpose, it does provide teachers with an additional resource for introducing new material.
8. **Enrich and extend the curriculum through technology.** Technology opens doors to experiences that students can't access in other ways, and these experiences can expand both the depth and breadth of the standard curriculum.
9. **Teach students to use technologies as tools**, then provide opportunities and encouragement for practice. Technology can help students bypass or compensate for disabilities, empowering them to achieve greater levels of independence.
10. **Extend the benefits of technology to teachers.** Technology is truly mainstreamed when it becomes an important tool not only for students but also for teachers.

Lewis, R. B. (1993). *Special education technology: Classroom applications*, pp. 102-103. Reprinted with permission.

Chapter VII
Assistive Technology in a Cultural Context

In most states, demographic statistics reveal increasing numbers of culturally and racially diverse children entering the education system. These children also represent the greatest population of those at-risk for disabilities. Despite efforts to recruit teachers of color, most preschool teachers and special educators are Caucasian. This reality creates potential for misunderstanding between teachers and the families they serve, and it intensifies the need for teachers to develop skills to better serve children and their families from many cultures.

Despite these potential differences, most teachers want children to learn, just as most parents want their own children to learn.

Sharon, a preschool teacher, worked with at-risk families and children from a variety of cultures. She believed so strongly that computers and assistive technology would provide educational benefit for many of her youngsters that she pieced together donated equipment to loan to the families. One foster mother skeptically accepted a computer and educational software into her home. Over time, the mother became aware of her child's enjoyment of the computer and how it was helping him learn. She requested additional software to challenge him further and began to learn to use the computer herself.

Becoming Culturally Competent

Culture is a set of attitudes, beliefs, values and practices characteristic of a group of people. Professionals in the field of education must be aware of and sensitive to the cultural experiences and values of children and families. This is particularly true when a child who has special needs will be introduced to an unfamiliar array of assistive technology.

A first step in responding to the cultural needs of families is to understand the dimensions of one's own culture. While culturally influenced behaviors are expressed daily in myriad ways, most people do not stop to think about what those behaviors mean. A firm handshake might be interpreted by one person as a sign of respect, and by another as a sign of aggression. Avoiding eye contact might be seen by a person from one culture as being sneaky, untrustworthy or dishonest, while persons from a different culture may intend it as a sign of respect. Recognizing such behaviors as simply preferences of a group of people is a useful way to think about cultural expression, and will help to remove the judgments that many individuals place on certain behaviors.

Two distinct but complementary processes for cultural learning are useful tools for gaining an appreciation of differences. A general learning approach teaches about principles that apply to any multicultural context. This approach emphasizes self, flexibility and increased tolerance of differences. A specific learning approach focuses on a particular nationality, ethnic group or cultural group in terms of its specific perspective. If a program has a sizable Southeast Asian population, for instance, learning about the family structures, beliefs, community organizations, and child rearing practices of that specific group would be beneficial to serving the needs of Southeast Asian families. The two approaches provide a full range of multicultural development for the learner.

Within a cultural group each family will choose its own belief and value system. It is most useful to ask sensitive questions of the individual family

to gain insight into how the family operates, and what it perceives as respectful or helpful.

Professionals must seek a common ground on which to build communication and a relationship with culturally diverse families. It is important not to assume, but respectfully ask questions to check understanding. Developing trust and a relationship is a time-consuming process that cannot be rushed. It demands dedication and consistency on the part of the professional. Josepha Campinha-Bacote, in describing a model for working with diverse cultures, wrote "What is cultural competence? It is the dynamic and ongoing process of seeking cultural awareness, cultural knowledge, cultural skill, and cultural encounters. Individuals must see themselves always in the process of 'becoming' culturally competent rather than 'being' culturally competent."

Aspire to Cultural Competence

- Acknowledge and value cultural differences
- Recognize influence of one's own culture on thoughts and actions
- Understand "dynamics of difference" inherent to cross-cultural interactions
    - Unique social history
    - Political/power relationships
    - Communication
    - Etiquette
    - Problem-solving
    - Help-seeking
- Examine meaning of behavior within its cultural context
- Find out <u>where</u> to obtain information related to groups
    - Culture is dynamic, changing
    - Learn what, who, how to ask

(Adapted from *Towards a Culturally Competent System of Care*, Cross, *et al.*, 1989.)

Figure 7.1

Relating culture and assistive technology

The preceding discussion becomes very clear in working with families relative to the largely unfamiliar field of assistive technology, as Sharon, the preschool teacher in the anecdote at the beginning of the chapter, discovered. Several considerations must be taken into account.

First, the *family and professional relationship* is crucial. Sharon made home visits, conducted parent meetings, and talked individually with the foster mother. Together they agreed on goals for the child. After a time, trust was built, and the mother accepted Sharon's recommendation for a computer. The child began to demonstrate significant gains in learning by using the technology. The parent and teacher relationship continued to develop to the benefit of the youngster.

Data gathering and *assessment for assistive technology* must be carried out in the child's natural environments and in collaboration with the family, perhaps including the extended family. Part of the process is to understand child-rearing values and practices of the family within its culture and how they affect the educational process. Professionals need to keep in mind that the family knows the child best, but they may have little understanding about technology and its potential to benefit the child.

In a recent workshop, a group activity was to write goals and dreams for various children. Several groups of parents and professionals began working immediately, but a group that included a Southeast Asian parent did not know how to proceed. A few carefully asked questions about what the mother wanted her child to be able to do soon revealed that the mother very much wanted her child to learn, but she did not think of this in terms of dreams or goals. In that same workshop, the values of assistive technology in granting independence for the child were stressed. Later it was discovered that in this mother's culture, as in some Asian cultures, inde-

pendence for children is not a value. The mother helped workshop leaders understand her desires for her child within her belief system while they helped her learn about how technology might help her child.

Planning for assistive technology interventions must also involve the family. Options should be presented with examples based on the child's needs and values that are important to the family. Computer software should not include anything which might be objectionable to the family and should allow the child to see or express his own culture. When selecting symbols for augmentative communication, teachers are advised to choose or modify a symbol set to reflect the culture of the family. A symbol of a child with dark skin may be more appropriate than a symbol of a Caucasian, for example. Symbols for food choices or home furnishings may require intentional thought, as well. Many communication devices can be prepared in any language; perhaps two languages may be necessary depending on the preferences of the caregivers.

Relating Culture and Assistive Technology

1. Develop a relationship
2. Assess for AT needs in a natural environment
3. Plan for AT with the family
4. Implement the plan
5. Monitor its use
6. Evaluate

Figure 7.2

Successful *implementation* of assistive technology must build on the strengths of the child and be integrated into existing routines of the child at home as well as at school. A question may be, "What does the child need to do or say in order to participate in family activities?" Some professionals recommend beginning with a simple series of choices, such as selecting what to wear each morning, within the context of something that occurs in the family on a daily basis.

In the same way, continued use of assistive technology must be *monitored and evaluated* within the family context. Becoming a sensitive listener and observer will help the provider in this step of the process. Asking questions of the family or other members of the culture may shed light on expectations or behaviors that the professional doesn't understand. In all encounters with families, one must serve with respect and openness, always with an attitude of "becoming" culturally competent.

BEST COPY AVAILABLE

Introducing assistive technology to families

Professionals who recognize the value of assistive technology for young children with special needs have found a variety of ways to help the multicultural families become aware of its benefits. A Head Start program, for example, invited a speaker to address the benefits of assistive technology for young children with a group of bilingual parents. Another parent education program provided computers and software on site for parents and children to use together. Often the children taught their parents how to use the software! In addition, some organizations have lending libraries available for families to try assistive devices at home in order to discover what might work for their child before seeking funding or purchasing a device. Individual teachers, such as Sharon, have found ways to help families become aware of how technology might fit into their families, within their own cultural contexts.

Practical Ideas to Introduce Technology

- ✓ Invite an "expert" to talk about AT.
- ✓ Develop a computer work/play station for children and parents to use.
- ✓ Gather a lending library of equipment for families to try.

Figure 7.3

Chapter VIII
Assistive Technology in the IEP or IFSP

The Law

All children in the United States have the right to a free and appropriate public education (FAPE) in the least restrictive environment (LRE). Educators have the responsibility to meet the special needs of all children. Professionals need to be aware of and understand special education law as it pertains to including assistive technology in the education of young children with disabilities.

[For a summary of the History of Laws Concerning Assistive Technology in the Education of Children with Disabilities, see Appendix C.]

Special education is "specially designed instruction, at no cost to the parents, to meet the unique needs of a child with a disability" (IDEA, 1997).

The definition of *Assistive Technology* includes two parts:

1) An *Assistive Technology Device* is "any item, piece of equipment or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of a child with a disability."

2) An *Assistive Technology Service* is "any service that directly assists a child with a disability in the selection, acquisition, or use of an assistive technology device. Such term includes—

(A) the evaluation of the needs of such child, including a functional evaluation of the child in the child's customary environment;
(B) purchasing, leasing, or otherwise providing for the acquisition of assistive technology devices by such child;
(C) selecting, designing, fitting, customizing, adapting, applying, maintaining, repairing, or replacing of assistive technology devices;
(D) coordinating and using other therapies, interventions, or services with assistive technology devices, such as those associated with existing education and rehabilitation plans and programs;
(E) training or technical assistance for such child, or where appropriate, the family of such child; and
(F) training or technical assistance for professionals (including individuals providing education and rehabilitation services), employers, or other individuals who provide services to, employ, or are otherwise substantially involved in the major life functions of such child."

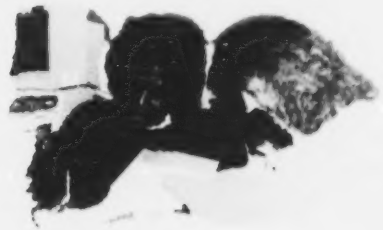
(IDEA, 1997)

Using assistive technology to provide a child with *benefits from education* requires its inclusion in the Individualized Education Program (IEP), or the Individualized Family Service Plan (IFSP). Both IEP and IFSP are documents outlining the child's current skills, the educational needs of the child, and a plan for meeting those needs. Development of these plans requires the input of a team of persons who are familiar with the child, including family members.

The Process

The first task of the team, including the family, is to consider the child's future and develop measurable, long-range goals as well as more specific short-term objectives. These goals and objectives will help to focus educational decisions of the team. (Refer to Chapter 3 for a more complete discussion of this concept.)

Next, the current skills of the child must be identified through formal and informal evaluation. Either professionals or parents can request an evaluation of a child, which must occur in a timely manner. For young children, assessments must take place in natural environments. According to IDEA (1997), "the IEP team shall consider whether the child requires assistive technology devices and services." Assistive technology assessment must be part of the overall evaluation completed every three years for a student currently receiving special education services and also for a child being referred for special education evaluation. If the district does not provide for assistive technology as part of the overall assessment, parents do have the right to request in writing an outside independent assessment at school district expense, and do have access to mediation and due process.



The purpose of the assessment is not only to discover the child's current levels of functioning, but also to identify other needs, obstacles to inclusion with peers, hindrances to independence, and barriers to learning or demonstrating mastery of skills. Assistive technology assessment may also determine how technology could assist the child to improve communication, expand access to instruction and services, and increase interaction with peers. Results of this assessment must be documented along with other results in the student's assessment summary report and annual IFSP or IEP.

Once the needs are defined, the team will write measurable goals and objectives to address areas of need. Goals and objectives that include assistive technology should be integrated throughout the entire plan and might be written in any of the nine domains of the IEP form: *intellectual, academic, communication, motor (fine and gross), sensory, health/physical, social/emotional/behavioral, functional,* and eventually *transition.* If, through evaluation, the team determines that assistive technology devices and services are needed for the child to "benefit from education" and/or gain independence in any of these domains, assistive technology must be specified in the IEP or IFSP.

According to the Office of Special Education Programs (OSEP), assistive technology can be considered in sections of the IFSP/IEP for *special education, related services, or supplementary aids and services.* The IEP section titled "Adaptations in General and Special Education" is one place to describe assistive technology and how it will be used by the child to accomplish objectives. Assistive technology can also be logically included in several other places in the IEP format. For example, technology could be described in any of the program areas. Under motor skills, a walker or power wheelchair may be required for navigation, or a computer with an adapted keyboard may be necessary for the child to access written communication. In the functional skills arena, a communication device could be included as a means to achieve objectives related to social interaction, self-advocacy, or other expressive communication. For example, a child may meet objectives for social skills such as gaining the attention of a friend, requesting a turn, and participating in a game by using a simple voice output communication aid.

Examples of IFSP Goals

.... will play and move on the playground at Building Blocks. Each playground time, ... will have the option of using her adapted car.

.... will play and interact with her friends. As needed, she will use an adapter, switches, and various battery-operated toys.

.... will communicate with her family and friends using a variety of communication options including talking, gestures, and digitized speech output systems.

.... will participate in activities at Building Blocks using a variety of no, low, and high technology adaptations.

.... will participate in home chores. She will use switches and an environmental control unit to turn on various electrical appliances.

JS Armstrong, 1995

Figure 8.1 Examples of AT in the IFSP

Examples of IEP Objectives

An example of an academic performance objective which includes assistive technology:

.... will identify 13 letters of the alphabet with 80% accuracy over 5 trials using a computer with an alternative keyboard by December.

An example of a motor skills objective which includes assistive technology:

....will increase fine-motor skills and eye-hand coordination using a trackball placed at midpoint with his dominant hand as measured by 80% accuracy in activating targets by the end of the semester.

An example of a cognitive functioning skills objective which includes assistive technology:

.... will increase participation in calendar activities during circle time by using a communication aid with at least four messages to report the weather, state the date, and ask for milk count in the monthly classroom rotation throughout the school year as measured by teachers' documentation of participation.

Project KITE, 1997

An example of an annual goal statement which includes assistive technology as a supplementary aid:

.... will use a computer and printer to complete art activities that other children do with other art media.

An example of augmentative communication to help achieve a social skill objective:

Using an electronic communication device .... will respond appropriately to social inquiries from classmates 5 times out of 5 opportunities over 5 consecutive days.

RESNA, 1992

Figure 8.2 Examples of AT in the IEP

BEST COPY AVAILABLE

What is written in the IEP must be provided for that child at no cost to the family. As a result, the language used to include assistive technology is important. Professionals should describe the necessary *features* of the desired device rather than *naming* it. (More information is available in Chapter 3.)

Federal law (IDEA, 1997) requires training the child, the family, and the school staff to implement assistive technology. These services include such things as how to program a communication device, how to implement that device in school or at home, or how to adapt it. It is important to document in the IEP who will *coordinate* the training, who will *accomplish* the training, and who will *maintain* the equipment. The Special Education and Related Services section of the IEP has appropriate space for defining these persons.

Issues

Some schools have expressed concerns about including assistive technology in IEPs and IFSPs or providing it for their students. Issues which have surfaced include:

- lack of awareness of the mandates to provide assistive technology.
- lack of qualified personnel...
  - ...to carry out assistive technology assessment.
  - ...who know enough about assistive technology to advise IEP teams.
  - ...to train children, parents and professionals to use particular devices effectively.
- concern about a history of non-use of expensive devices (80 percent are not used after six months).
- insufficient equipment available to loan to families so they can experiment to find suitable devices for the child.
- insufficient resources to purchase and maintain such equipment.

These issues are very real and sometimes result in the failure to acquire assistive technology for a child in a timely manner. However, the law is

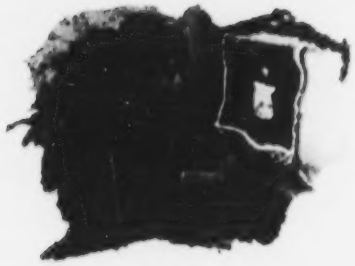
clear. A free, appropriate public education is the right of all children. Special education is to be provided at no cost to families and in the least restrictive environment. An IFSP or IEP, developed by a multi-disciplinary team including the child's parents, governs the education of a child with special needs. If, through assessment, the team determines that assistive technology is necessary to allow the child to benefit from education, and specifies it in the IEP or IFSP, it must be provided in a timely manner at no cost to the family.

In addition, a 1991 policy statement from the Office of Special Education Programs gives the IEP team the authority to acquire a device and to allow the child to transport that device between school and home, if necessary, to achieve IFSP and IEP goals and objectives. The document clearly stated that a "local school board may not unilaterally change the statement of special education and related services contained in the IEP for a child" and inferred that the school board could neither refuse to pay for nor impede the timely implementation of an IEP.

Funding issues

When an IEP team collaboratively decides that assistive technology is warranted for a student to access free appropriate public education, it must be written into the IEP or IFSP. Because funding for adaptations and assistive technology is often an issue, a few pointers might be helpful.

First, it is crucial to have an appropriate evaluation by an individual who is knowledgeable about assistive technology. This person needs to be aware of the current technology and tools available to address specific needs. If more than one area is being addressed, it may be necessary to have more than one person conduct the evaluation. For example, a speech language therapist may be able to conduct an evaluation for a communication device. This person, however, will not necessarily be able to address needs for proper seating and positioning.



The most expensive, state-of-the-art device may not necessarily be the most appropriate equipment. If an expensive device is requested, school administrators may assuredly question whether a less expensive tool will accomplish similar results. The team needs to have valid documentation available to show the reasons for the request.

A sophisticated device may not necessarily be the most appropriate for the child. Matching features of a device to the child's capabilities, interests, needs, and lifestyle is critical. The team should select a device that offers the child the assistance he or she needs to benefit from education and that is easy to integrate with the daily activities of the child at home and in the classroom.

It must be emphasized, however, that it is the school's responsibility to provide the device in a timely manner. Parents must not be required to develop alternative funding sources. Providing assistive technology devices and services in order to offer free, appropriate public education requires financial commitment. Schools have found several ways to meet the needs of children who use assistive technology.

Creative Financing

A representative from the school district participates in IFSP and IEP team meetings. This representative may be the superintendent, a principal, assistant principal, or administrative designee. The roles of this participant are varied and may include: gaining overall information about the students in the school; advocating for the needs of the child and family, including assistive technology needs; facilitating communication between staff and family members; and offering input for funding the adaptations or devices that are needed by the child.

Some administrators have begun to look at their budgets in creative ways to accomplish objectives for their schools and students. Creative financing

allows non-traditional use of funds from traditional sources or pulls resources from a variety of funds to support a single objective.

Co-funding is a method schools use to locate dollars for devices. *Grants* from large corporations are sometimes available and are advertised to schools. Special educators can be in close contact with administrators who receive these requests. STAR, a state technology program, has developed guidelines for reading requests for proposals and following those guidelines. (See information on STAR in Appendix E.)

Local businesses are sometimes willing to fund technology needs. Sometimes businesses that develop assistive devices form partnerships with schools as testing sites for their products. In one district, this arrangement benefited several children. *Community and charity organizations* have funded a variety of equipment for children with special needs.

Insurance companies, and some state and federal agencies such as Medical Assistance, will provide particular devices that are medically necessary. However, if the use of insurance would result in a cost to the family, such as increased premium costs, parents do not have to use this resource. For example, the purchase of a device may have an effect on the lifetime caps and increase premium costs.

Some regional and local special education units are developing *lending libraries* of devices purchased by the unit and housed in a central location. This equipment is made available to professionals who work with children with special needs in order to try devices to include in the IEP or IFSP. Lending libraries are one solution for finding appropriate devices for individual children. They need to be operated by trained personnel, adequately stocked with multiples of a range of devices, and amenable to extended loan periods to accommodate learning time for professionals and parents, and time for the child to understand and use the device in order to assess its appropriateness.

Parents and educators should not overlook the possibilities of refurbished, *used computers and equipment*. Some computer-related businesses accept older computers as trade-ins, rebuild them, and offer them to the public at no or reduced costs. Companies that upgrade their office computers may be willing to work with the school to find homes for their older machines. Some of these computers may have to be adapted to meet individual needs.

Educators need to understand the law concerning assistive technology for children with special needs and the process of including it in the IFSP and IEP. Assistive technology assessment and provision of both devices and services are required by law. In order to provide assistive technology, schools have implemented a variety of funding strategies including creative financing and methods for co-funding. A list of additional resources is included in Appendix E.

Appendices

A. Bibliography 62

B. Teacher Resources 66

1. Planning Technology Interventions for Families Questionnaire Form
2. Effective Lessons to Integrate Technology
3. Project KITE's Software Evaluation Form
4. Software for Children Ages 3-8
5. Switch Software for Young Children
6. Technology Vendors and Organizations

C. Legal Issues 83

1. Part C- Infants and Toddlers with Disabilities: Assistive Technology Policy
2. History of Laws Concerning Assistive Technology in the Education of Children with Disabilities

D. About Project KITE and PACER Center .. 100

E. Other Organizations 103

1. Alliance for Technology Access
2. Organizations Funded under the Technology-Related Assistance for Individuals with Disabilities Act of 1988
3. Parent Training and Information Centers

Appendix A

Bibliography

Bibliography

Anderson, C., Berry, L., & Waldschmidt, J. (1995). *Creative play ideas with toys.* Golden Valley, MN: Courage Center.

Armstrong, J. S. (1995). "Assistive technology assessment: Answering the questions." Presentation at the Closing the Gap Conference, Minneapolis, MN.

Armstrong, J. S. & Fonner, K. (1996). "Using family dreams to develop meaningful goals that include assistive technology." Presentation at the Closing the Gap Conference, Minneapolis, MN.

Armstrong, J. S. & Jones, K. (1994). "Getting off to a great start: Using assistive technology with young children." Presentation at the Closing the Gap Conference, Minneapolis, MN.

Australian Early Childhood Association. (1993). *We all belong: Multicultural child care that works.* St. Paul, MN: Redleaf Press. (Video).

Beaty, J. J. (1992). *Preschool: Appropriate practices.* Orlando, FL: Harcourt Brace Jovanovich.

Beckman, P. J. (1996). *Strategies for working with families of young children with disabilities.* Baltimore, MD: Paul H. Brookes Publishing Co.

Benton, L. (1997). Discussion Group @ http://www.edc.org/FSC/NCIP/. Newton, MA: National Center to Improve Practice in Special Education Through Technology, Media and Materials (NCIP).

Bowe, F. G. (1995). *Birth to five: Early childhood special education.* Albany, NY: Delmar Publishers Inc.

Burkhart, L. J., (1993). *Total augmentative communication in the early childhood classroom.* Eldersburg, MD: Linda J. Burkhart.

Chambers, A. C. (1997). *Has technology been considered? A guide for IEP teams.* Reston, VA: Council of Administrators of Special Education and the Technology and Media Division of The Council for Exception Children.

Courage Lekotek/Compuplay Center. (1995). *Creative play ideas with computers.* Golden Valley, MN: Courage Center.

Derman-Sparks, L. & the A.B.C. Task Force. (1989). *Anti-bias curriculum: Tools for empowering young children.* Washington, DC: National Association for the Education of Young Children (NAEYC).

Eckstein, R. M. (1994). *Directory of computer and high technology grants.* (2nd Ed.) Richard M. Eckstein.

Goossens', C., Crain, S. S. & Elder, P. S. (1995). *Engineering the preschool environment for interactive symbolic communication.* Birmingham, AL: Southeast Augmentative Communication Conference Publications.

Haugland, S. W. & Shade, D. D. (1994). "Software evaluation for young children." In *Young children: Active learners in a technological age,* eds. J. L. Wright & D. D. Shade, 63-76. Washington, DC: NAEYC.

Hohmann, C., Carmody, B. & McCabe-Branz, C. (1995). *High/Scope Buyer's Guide to Children's Software.* (Vol. 11) Ypsilanti, MI: High/Scope Educational Research Foundation.

Hourcade, J.J., Parette, H.P., Jr. & Huer, M.B. (1997). "Family and cultural alert! Considerations in assistive technology assessment." In *Teaching Exceptional Children,* 30(1), 40-44.

Huber-Bowen, T. (1993). *Teaching in the diverse classroom: Learner-centered activities that work.* Bloomington, IN: National Educational Service.

Kissinger, K. (1994). *All the colors we are: The story of how we get our skin color.* St. Paul, MN: Redleaf Press.

Lewis, R. B. (1993). *Special education technology: Classroom applications.* Pacific Grove, CA: Brooks/Cole Publishing Co.

Male, M. (1994). *Technology for inclusion: Meeting the special needs of all students.* Needham Heights, MA: Allyn and Bacon.

McGonigel, M. J., Kaufmann, R. K. & Johnson, B. H., Eds. (1991). *Guidelines and recommended practices for the individualized family service plan.* (2nd ed.). Bethesda, MD: National Early Childhood Technical Assistance System (NEC*TAS) and Association for the Care of Children's Health.

NAEYC position statement on technology and young children ages three through eight. 1996. Washington, DC: NAEYC.

National Center to Improve Practice in Special Education Through Technology, Media and Materials(NCIP). (1996). *Welcome to my preschool! Communicating with technology.* Newton, MA: Education Development Center, Inc. Video.

Russell, S. J., Corwin, R., Mokros, J. R. & Kapisovsky, P. M. (1989). *Beyond drill and practice: Expanding the computer mainstream.* Reston, VA: The Council for Exceptional Children.

Taber-Brown, F. M. (1997). "Using software to prepare students to effectively use communication devices and adaptive input to computers." Presentation at CSF/CEC and TAM Conference of Special Education & Technology, San Jose, CA.

The Alliance for Technology Access. (1994). *Computer resources for people with disabilities: A guide to exploring today's assistive technology.* Alameda, CA: Hunter House Inc. Publishers.

Wilson, M. S. (1996). *Sequential software for language intervention and development.* Winooski, VT: Laureate Learning Systems, Inc.

Wright, J. L. & Shade, D. D., Eds. (1994). *Young children: Active learners in a technological age.* Washington, DC: NAEYC.

York, S. (1992) *Developing roots & wings: A trainer's guide to affirming culture in early childhood programs.* St. Paul, MN: Redleaf Press.

York, S. (1991). *Roots & wings: Affirming culture in early childhood programs.* St. Paul, MN: Redleaf Press.

BEST COPY AVAILABLE

Appendix B

Teacher Resources

1. Planning Technology Interventions for Families Questionnaire Form
2. Effective Lessons to Integrate Technology (form)
3. Project KITE's Software Evaluation Form
4. Software for Children Ages 3-8
5. Switch Software for Young Children
6. Technology Vendors and Organizations

Planning Technology Interventions with Families Questionnaire Form

Child's Name _____ **Date** _____

Family Member _____ **Staff** _____

This questionnaire attempts to gather pertinent information about a child and his or her family so that meaningful technology interventions can be included in the child's IFSP and his/her everyday life. This questionnaire should be used with all members of his or her family—including babysitters, grandparents, brothers and sisters, and parents—really everyone who spends significant time interacting with the child.

1. What do you and your child do each day? What events or routines happen each day? What does your child do during each of these activities? What would you like him or her to do during the activity that he or she can't do? We have given you a few activities to get you started—you can use any and all of these, but add your own, as needed.

ACTIVITY	What the child currently does	What you want the child to do
Waking up		
Breakfast		
Going for walk		
Playtime		
Dinnertime		
Bedtime		

2. How does your child tell you what he or she wants or does not want? How does your child tell you what he or she likes and does not like?

3. What toys do you have at home that your child really likes? How does he or she play with the toy?

4. What toys do you have at home that your child does not seem to like?

5. Are there other things, times, people that your child has shown that he or she really likes or really does not like?

Likes	Dislikes

6. Have you done things at home to help your child play with toys or use objects better? Have you found ways to position your child so that he or she can play better with toys?

7. Are there things you have seen (at school, on TV, at the store) that you would like us to try with your child?

The material in this document has been adapted with permission from an original document by Armstrong, *et al.*, UCPA, Washington, DC.

Effective Lessons to Integrate Technology

Title: _____

Objective(s)

_____

_____

_____

Materials

_____

_____

_____

_____

_____

Pre-Computer Activity (introductory activity)

_____

_____

_____

Computer Activity

_____

_____

Post-Computer Activity (follow-up activity)

_____

_____

_____

Evaluation

_____

_____

_____

Reflection

_____

_____

_____

©1997 Project KITE, PACER Center, 4826 Chicago Avenue South, Minneapolis, MN 55417

Project KITE's
Software Evaluation Form

Criteria	Characteristics	Rating*
Age Appropriate	Realistic presentation of concepts	____
Child Control	Children make choices, set pace	____
Clear Instructions	Spoken instruction; picture choices	____ ____
Cultural Issues	Classroom cultures represented Sensitivity to diverse cultures Bilingual/multilingual	____ ____ ____
Expanding Complexity	Easy to challenging activities; learning sequence is clear; teaches powerful ideas	____ ____ ____
Independence	Constant supervision not required after initial exposure	____
Process Orientation	Process engages, product secondary; discovery learning, not skill drill; intrinsic motivation	____ ____ ____
Real-World Model	Simple, reliable model; concrete representations; objects function	____ ____ ____
Technical Features	Appealing graphics and animation; uncluttered realistic graphics; easy to use; intuitive appropriate sound effects/music	____ ____ ____ ____
Trial and Error	Children test alternative responses	____
Transformations	Varied to maintain interest; process highlighted	____ ____

*Choose a rating scale that makes sense to you. (For example, a Lickert scale: 4=great; 3=good; 2=not great; 1=totally misses the boat.) The highest score wins!

BEST COPY AVAILABLE

Software for Children

Ages 3-8

KITE participants previewed and used the following software programs in their classrooms and homes. Additional information may be obtained by contacting the developer. (See Appendix B for a list of technology vendors and organizations.) Many of the selections are available from local software outlets and from comprehensive software catalogs.

A Silly Noisy House contains 14 favorite songs and rhymes, silly sounds and delightful animations. Exploring the bears' house is a fun-filled introduction to the computer for young children. Universal CD-ROM from Voyager for Macintosh and Windows.

Bailey's Book House provides many enjoyable opportunities to learn about letters, prepositions, and words that rhyme. Children can create an adventure story and design greeting cards for special events and holidays. In **Millie's Math House**, little, middle and big characters need shoes that fit and Harley eats only the cookies that have the number of jellybeans he has asked for. Recognizing patterns is fun with pictures and sounds, and matching shapes results in a house to please the mouse family. **Sammy's Science House** is a place where children look for features and classify things. They experiment with weather, construct vehicles in the workshop, put pictures in sequence for a movie, and visit Acorn Pond at different seasons of the year to observe and learn about the animals. **Thinkin' Things Collection 1** is about thinking analytically, remembering, solving problems and having fun. Create toons with Toony Loon, find the right Fripple to please the customer, create a feathered friend and play the percussion instruments with Oranga Banga. All of the programs in Edmark's House series have a single switch scanning option. Children of all ages laugh and learn with these software programs for Mac and Windows. The CD-ROM versions of these programs have some additional activities.

Children's Switch Progressions and **Point to Pictures** are two of RJ Cooper's switch programs that teach cause and effect, attending, and waiting to respond. They move on to timed, purposeful interactions, following directions, and matching spoken words and pictures. RJ Cooper's sense of humor and encouragement give children the will to try and a wonderful feeling of accomplishment. Originally programs for Apple computers, they are now available also for both Macintosh and Windows.

Circletime Tales is a collection of three nursery rhymes for young children. Eensy Weensy Spider, Mary Wore Her Red Dress and Five Little Ducks use rhyme and repetition to build emergent literacy skills. Kids learn concepts such as up, down, colors and counting. Switch users may turn the pages as the rhymes are read. **Storytime Tales** contains the stories Forgetful's Secret, Dirty Duds and Bobby, Bobby, What Did You Do? which are based on meaningful activities from everyday life. From Don Johnston for Macintosh only.

Marblesoft's **Early Learning** has activities for learning colors, shapes, letters and numbers. Input methods include switch, Power Pad, TouchWindow and IntelliKeys. Screens are very simple and speech is in a child's voice. Multiple levels progress in difficulty and there are many options to customize the software for the user. It is available for Apple and Mac.

First Words and **My House** are two examples of carefully developed programs in Laureate Learning Systems' series for acquisition of receptive and expressive language. These provide highly-structured lessons to master words. The speech quality is exceptional and all are switch and TouchWindow accessible. The child is first taught the names of objects in a category such as animals, vehicles or toys. At an intermediate level the child is asked to identify an object from two choices, and finally the child is tested for mastery. The excellent record-keeping of responses and the ability to determine many parameters make this software effective and popular with teachers, parents, and children. Laureate also has the **Exploring Early Vocabulary Series** for learners who can work with less structure and the Talking Series in which the child can communicate words of his choice. Most of the selections are available for Apple, Mac and IBM.

Imagination Express series from Edmark gives children the tools to create terrific, interactive stories based on a theme. Children select background scenery, choose and animate characters, record conversations, write a story, narrate pages, and add music and sound effects to create their own adventures. **Neighborhood** is the first and most familiar setting with homes, parks, schools, and secret places. The graphics library includes people of various cultures. **Castle** invites imaginary stories of dragons, knights, queens, juggling and jousting. **Rain Forest** has exotic animals, plants and sounds. There are many ways to create and experiment in Imagination Express. Available for Mac and Windows, this software helps with language development, whole language reading, and writing.

IntelliPics is a program in which a parent or teacher (or older sibling) can easily construct exercises with objects, numbers, colors, shapes, sounds and movement. Choose from the hundreds of possibilities in the picture library or use your originals. Provide many choices or just a few. Record a child's voice or

interesting sound, define movements, and you have a multisensory experience customized for the child. **The Hungry Shark** is one of six IntelliPics activities offered in a package called **Hands-On Concepts**. Overlays for IntelliKeys and off-computer activities provide additional opportunities for language exploration.

IntelliTalk is a very simple talking word processor with lots of flexibility. It will speak the letters, words, sentences or the entire story - or all of those choices. Fonts may be various sizes and colors. For children who are concentrating on writing and are distracted by busy screens and too many choices this software may be the answer. It is available for Apple, Mac and IBM computers. **Overlay Maker**, also from IntelliTools, provides endless possibilities for users of IntelliKeys. Make overlays to match the needs and abilities of the children. Use the symbols which come with the software or make originals. Used with a talking word processor such as IntelliTalk, an overlay can be used to tell the child's own story aloud. This is a marvelous opportunity to make a communication board reflecting the child's culture.

Kid Desk from Edmark protects valuable programs and files from curious children. Adults create a personalized "desktop" on the computer for the child and select the programs that the child or group of children can access. The desktop may include accessories such as clock, calendar, notepad, and calculator. The CD-ROM version of the program enables others using the computer to leave "voice mail" or "e-mail" messages for the child. Different desktops can be developed for each child in the family or classroom.

Kid Phonics is an engrossing and entertaining exercise in learning about the sounds that letters make and putting the sounds together to make words. Learn to identify similar-sounding words and the connection between sounds and letter clusters. Progress to building letter clusters into words and putting words into sentences (serious or silly). This program from Davidson is available on CD-ROM for both Mac and Windows.

Kid Pix 2 is one of the most popular programs for children and one of the most versatile. Children can draw, stamp and add letters and text to their creations. Wacky Brushes and sound effects add to their enjoyment of the process. The letters of the alphabet may be spoken in English or Spanish. Children can record their own voices to tell about their work. A series of drawings can be grouped into a narrated slide show. **Kid Pix Studio** is a new version on CD-ROM. **Kid Cuts** gives children the opportunity to invent characters, costumes, hats, masks, paper dolls, puppets and puzzles... then print, cut, wear them or play with them. These selections from Broderbund are available for Windows and Mac.

Kid Works 2 from Davidson combines a paint program with a word processor which has speech capabilities. A child can write a story and draw pictures to illustrate it. There is an icon library divided into nouns, verbs and adjectives which has pictures to represent words. New icons can be created and it is easy to change words in the story to pictures and back again. Kid Works 2 will read the story out loud, and of course it may also be printed. The bilingual version includes Spanish as well as English. Both are available for Mac and Windows.

Living Books CD-ROMs from Broderbund are delightful multimedia experiences developed around stories which can be read in English or Spanish (Grandma and Me also offers Japanese.). Exceptional animation, speech, and music engross children as they click on characters and objects on each page of the book. Adults, too, enjoy the good humor and creativity used to bring stories such as **Grandma and Me, Tortoise and the Hare, Dr. Seuss' ABC's** and **Green Eggs and Ham** to life in this way. Windows and IBM.

In **McGee** from Lawrence Productions the child helps McGee explore different rooms in his house. McGee is an adorable youngster who plays with his toys, likes his privacy in the bathroom, and wakes his mother too early in the morning. It's great for encouraging communication and making simple choices. Other software in the series include **Katie's Farm** and **McGee at the Fun Fair** and are available for the Apple IIGS, Mac and IBM.

The activities of **Muppets On Stage** begin with pressing letter keys and number keys to see corresponding objects. Hitting the return key brings the objects to life with animation and sound. When the Muppet Learning Keys are used, the option of color is also included in the exercise. Other activities teach number and letter recognition. Teachers may select which numbers and letters to include in the activity. This software and keyboard from Sunburst are available for Apple, IBM and Mac. **Muppetville** and the **Muppet Word Book** follow in the series.

My First Incredible Amazing Dictionary introduces children to more than 1,000 words and their meanings. Full of animations and sounds, this CD-ROM from Dorling Kindersley contains many beautiful photographs of children from a variety of cultures. Every word and definition is spoken aloud. Cross-referencing allows children to jump from the definition of dog to examples of other pets, for example. Games and activities reinforce what the children have learned in the dictionary.

P.B. Bear's Birthday Party is a charming interactive story for young children on CD-ROM. Words and pictures are highlighted as the story is read. Activities based on the story introduce sizes, colors, shapes and numbers. From Dorling Kindersley for Mac or Windows.

The Playroom from Broderbund includes activities for learning about time, letters, numbers and simple words. Children can design a toy by changing its body parts and play a board game with on-screen dice and counting. **The Backyard** is a companion selection which is fun for young children. Both are available for Apple computers, Macintosh and IBM.

Playskool Puzzles contains jigsaw puzzles, connect the dots, or create your own puzzles. There are several levels of difficulty as well as the opportunity to paint, save and print puzzles. Good for spatial reasoning, pattern matching and creativity, the software comes on a universal CD-ROM for both Windows and Mac.

Forty progressively challenging storybooks and over 100 skill-building activities comprise **Reader Rabbit's Interactive Reading Journey**. The lessons focus on phonics, letter and pattern recognition and sight-word vocabulary. There are 20 different letter lands, each with a skill house, two storybooks and surprises. The directions are clear, segments are short, and the speech quality is excellent. This software from The Learning Company is on a universal CD-ROM for both Windows and Macintosh.

Children have long been fond of Stickybear software from Optimum Resources. New selections for Mac and Windows include **Stickybear's Early Learning, Stickybear's Reading Room** and **Stickybear's Math Town**. Stickybear's Early Learning has six activities including number recognition, letter recognition, shapes, colors, groups, and opposites. The activities may be simply exploratory or structured to demonstrate mastery. In the alphabet activity Stickybear names an object which begins with the letter pressed and invites the child to repeat the word after him. Most of the activities are available separately for Apple and MS-DOS. In the Reading Room activities progress from matching pictures to words to building sentences by choosing one of the nouns, verbs and objects offered. There is a recording option in this activity for the child to read the sentence he has selected. The sentence is played back followed by Stickybear reading the same sentence for comparison. Stickybear's Math Town gives children lots of practice in addition, subtraction, multiplication and division as well as word problems. Six levels of difficulty keep the activities challenging. After solving a group of problems, children are rewarded with short animated adventures.

Children love to work with MECC's **Storybook Weaver** from The Learning Company. They pick the scenery, choose some pictures from an extensive library of graphics to place in the scene and write their stories. They can choose music to accompany the opening of the book, assign sounds to go with the characters in the illustrations. The spell-checker will find mistakes in spelling and a thesaurus is available to suggest new words. Story Starters help the child who can't

think of anything to write. People, homes and objects from many cultures are included in the graphics library. The skin color of the characters may be changed and the graphics edited. The story can be read aloud in either English or Spanish with the new CD-ROM version for Mac and Windows.

Each volume of the **WiggleWorks** series is a combination of three engaging stories and other activities to develop skills in reading and writing. The stories are read aloud with music, sound effects and animation. Children can record their voices and hear themselves read. They can get help with unfamiliar words and spellings and can also make pictures, word lists and their own books. Wiggle Works includes a scanning option for switch users. This CD-ROM for Macintosh computers was produced by Scholastic for Apple Home Learning.

Words Around Me teaches 275 common vocabulary words for people, places, things and actions. Children learn to associate spoken words with visual representations including photographs, drawings and animations. The five activities in progression are word identification, plurals, categorization, sameness and difference. Four review games provide enjoyable opportunities for reinforcement. This Macintosh CD-ROM from Edmark teaches vocabulary in English and Spanish.

Switch Software for Young Children

RJ Cooper's **Children's Switch Progressions** for Apple, IBM or Mac are switch-activated activities appropriate for children. Other programs from RJ Cooper include **Point To Pictures**, **Early & Advanced Switch Games**, **Build-A-Scene**, and **The Human Being Machine**.

Laureate's Creature Collection (e.g. **Creature Antics**, **Creature Chorus**) and **First Words/Verbs** are available for Apple, IBM and Mac. They progress from cause and effect through language and vocabulary development.

The Edmark House Series (**Millie's, Bailey's, Sammy's, Thinkin' Things, and Trudy's**) for Windows or Macintosh have a scanning option in which the different choices on each screen are highlighted one at a time. A switch press operates the software.

Marblesoft's **Early Learning** for Apple or Mac includes activities for colors, shapes, numbers, and letters.

Speaking Dynamically and **I Can Play Too!** (Macintosh only) from Mayer Johnson provide switch-accessible communication.

WiggleWorks (Macintosh only) integrates listening, reading, writing, and alphabet games with three children's stories in each volume. Produced by Scholastic for Apple Home Learning, this CD-ROM is for Macintosh.

Jokus Software (e.g. **Toystore** and **Switch Intro** for Macintosh), UKanDu Little Books and UKanDu Switches, Too!, Press To Play Series (all for Macintosh and Windows) from Don Johnston incorporate cause and effect, choice-making and timing activities for switch users.

Macintosh selections **Storytime** and **Storytime Songbook** from Creative Communicating include entertaining stories and songs for preschoolers.

Technology Vendors and Organizations

ABLEDATA
National Rehabilitation Information Center
8455 Colesville Road, Suite 935T
Silver Spring, MD 20910-3319
800 227-0216
301 589-3563

AbleNet, Inc
1081 Tenth Avenue SE
Minneapolis, MN 55414
800 322-0956
612 379-0956

ADAMLAB
33500 Van Born Road
P.O. Box 807
Wayne, MI 48184
313 467-1610

Alliance for Technology Access
2175 East Francisco Blvd., Suite L
San Rafael, CA 94901
415 455-4575

Apple Computer, Inc. Worldwide Disability Solutions
1 Infinite Loop MS 38-DS
Cupertino, CA 95014-6299
408 996-1010
800 SOS-APPL

Broderbund Software-Direct
500 Redwood Blvd. Box 6121
Novato, CA 94948-6121
800 521-6263
415 382-4400

Center for Applied Special Technology (CAST)
39 Cross Street
Peabody, MA 01960
508 531-0192

Closing the Gap
PO Box 68
Henderson, MN 56044
320 248-3294

Council for Exceptional Children (CEC)
1920 Association Drive
Reston, VA 22091-1589
703 620-3660

Creative Communicating
P.O. Box 3358
Park City, UT 84060
801 645-7737

Davidson & Associates
19840 Pioneer Avenue
Torrance, CA 90503
800 545-7677

Don Johnston, Inc.
PO Box 639
1000 N. Rand Road, Bldg. #115
Wauconda, IL 60084
800 999-4660

Dorling Kindersley Family Learning
7800 Southland Boulevard, Suite 200
Orlando, FL 32809
407 857-5463

Dunamis, Inc.
3423 Fowler Boulevard
Lawrenceville, GA 30244
800 828-2443
404 932-0485

Edmark Corporation
PO Box 97021
Redmond, WA 98073
800 362-2890

Educational Resources
1550 Executive Drive
Elgin, IL 60123
800 624-2926

Enabling Devices
Toys for Special Children
385 Warburton Avenue
Hastings on Hudson, NY 10706
800 832-8697
914 478-0960

Exceptional Parent Magazine
PO Box 3000, Dept. EP
Denville, NJ 07834
800 247-8080

Frame Technologies
W681 Pearl Street
Oneida, WI 54155
414 869-2979
414 869-2979

Hartley
9920 Pacific Heights Blvd., Suite 500
San Diego, CA 92121
800 247-1380
517 333-5300

IBM Special Needs Systems
Building 904, Internal Zip 9448
11400 Burnet Road
Austin, TX 78758
800 426-4832

InfoTech
University of Iowa
UHS-RM. S 384
Iowa City, IA 52242-1011
800 331-3027

IntelliTools
55 Leveroni Court, Suite 9
Novato, CA 94949
800 899-6687
415-382-5959

Judy Lynn Software
278 Dunhams Corner Road
East Brunswick, NJ 08816
908 390-8845

kidTECH/SoftTouch
3204 Perry Place
Bakersfield, CA 93306
805-873-8744

Laureate Learning Systems
110 East Spring Street
Winooski, VT 05404
800 562-6801
802 655-4755

Lawrence Productions
1800 South 35th Street
Galesburg, MI 49053
800 421-4157
616 665-7075

Linda J. Burkhart
6201 Candle Court
Eldersburg, MD 21784
410 795-4561

Macomb Projects
Western Illinois University
27 Horrabin Hall, Macomb, IL 61455
309 298-1634

Marblesoft
12301 Central Avenue NE
Blaine, MN 55434
612 755-1402

Mayer Johnson
P.O. Box 1579
Solana Beach, CA 92075-7579
619 550-0084

Mindscape Software
88 Rowland Way
Novato, CA 94945
800 231-3088

National Information Center for Children and Youth with Disabilities (NICHCY)
P.O. Box 1492
Washington, DC 20013
202 884-8441

National Lekotek Center
2100 Ridge Avenue
Evanston, IL 60201-2796
800 366-PLAY
847-328-0001

NCIP Education Development Center, Inc.
55 Chapel Street
Newton, MA 02158-1060
617 969-7100 x2387

Optimum Resources, Inc.
5 Hilltech Lane
Hilton Head Island, SC 29926
803 689-8000

Playskool Software
Hasbro Interactive
60 Delta Drive, Lower Level
Pawtucket, RI
02860-4556
800 638-6927

Prentke Romich Company
1022 Heyl Road
Wooster, OH 44691
800 262-1984
216 263-4829

RESNA
1700 N. Moore Street, Suite 1540
Arlington, VA 22209-1903
703 524-6686

RJ Cooper & Associates
24843 Del Prado #283
Dana Point, CA 92629
800 RJCooper

Roger Wagner
1050 Pioneer Way, Suite P
El Cajon, CA 92020
800 421-6526
206 776-3116

Sanctuary Woods Multimedia
1875 South Grant Street, Suite 206
San Mateo, CA 94402
415 578-6340

Scantron Quality Computers
20200 Nine Mile Road
P.O. Box 349
St. Clair Shore, MI 48080
800 777-3642
810 774-2698

Scholastic Software
555 Broadway
New York, NY 10003
800 541-5513

Sentient Systems
Technology, Inc.
2100 Wharton Street
Pittsburgh, PA 15203
800 344-1778

Sunburst Communications
101 Castleton Street
Pleasantville, NY 10570
800 321-7511

TASH
Unit 1-91 Station Street
Ajax, Ontario
Canada L1S 3H2
800 463-5685
905 686-6895

The Learning Company (incl. MECC)
1 Atheneum Street
Cambridge, MA 02142
800 227-5609

Trace Research and Development Center
Room S-151, Waisman Center
1500 Highland Avenue
Madison, WI 53705
608 262-6966

Troll Touch
25510 Avenue Stanford, Suite 106
Valencia, CA 91355
805 295-0770

UCLA/LAUSD Project
UCLA Intervention Program
100 Veteran Avenue, Rm 23-10
Los Angeles, CA 90024
310 825-4821

United Cerebral Palsy Associations, Inc. (UCPA)
1660 L Street NW, Suite 700
Washington, DC 20036
202 776-0406

Voyager
578 Broadway, Suite 406
New York, NY 10012
212 431-5199
914 591-5500

Zygo
P.O. Box 1008
Portland, OR 97207
800 234-6006

88

Appendix C

Legal Issues

1. **Part C- Infants and Toddlers with Disabilities: Assistive Technology Policy**
2. **History of Laws Concerning Assistive Technology in the Education of Children with**

Part C- Infants and Toddlers with Disabilities: Assistive Technology Policy

Critical Element #1: An Assessment of the Assistive Technology Needs of the Child, Including an Evaluation of the Functioning of the Child in His or Her Natural Setting

Do state policies regarding evaluation include provisions regarding assistive technology?

If state regulations or policies do not include assistive technology as an area to be assessed if appropriate, then these regulations or policies should be revised to mention assistive technology specifically.

What developmental areas should be assessed?

All suspected areas of delay should be assessed. An assistive technology assessment or evaluation should address possible technology devices and services that are appropriate for each area of delay. The assistive technology evaluation should also address the impact of a particular device on other aspects of the child's life. For instance, if the child needs a communication device, the assessment should also address positioning, access to the device, and mobility.

When can evaluation of assistive technology needs be requested?

An assistive technology assessment can be requested at any time, but should routinely be requested when the child is first assessed for eligibility for Part C services if there is reason to believe that the child could benefit from the use of assistive technology. States should develop a list of indicators or questions to assist team members in determining if an assistive technology assessment is warranted. Such indicators could include, but not be limited to the following:

- Is the child able to play with toys independently?
- Is the child able to communicate effectively?
- Is the child able to sit independently? Stand independently? Walk independently?
- Is the child able to feed himself/herself independently?

If the answer to any of these questions is "no," then an assistive technology evaluation should be conducted. An expanded set of indicators should be developed for

---

From *Tech Express*, Summer 1997, pp. 4-13. Reprinted with permission of the Assistive Technology Funding and Systems Change Project of United Cerebral Palsy Associations.

school-aged children addressing such factors as ability to read and to write effectively, etc.

What happens as a result of the evaluation—are there specific recommendations?

The evaluation should make specific recommendations regarding the technology options that are appropriate to address each area of the child's delay and meet developmental outcomes for the child. The evaluator should discuss the full range of appropriate options from low to high tech. It is important to recognize, however, that in many instances there may not be a full range of options that are appropriate. The evaluator should be prepared to discuss possible sources for obtaining any recommended devices, including the possibility of an equipment loan to the family.

The recommendations should be attentive to issues of cultural appropriateness. For example, when choosing computer software, the focus should be on devices that will be easily incorporated into the life of the family.

Who receives the reports and suggestions for future evaluations?

The multidisciplinary committee should receive the assistive technology evaluation in the same manner as it receives any other evaluation. Future evaluations should be performed in accordance with the timelines set forth in federal and state regulations governing reevaluation of infants and toddlers, and more often, if warranted.

Where should the evaluation be performed?

If possible, the evaluation should be performed wherever the child is most comfortable—home, day care, or wherever the child spends his or her day. If specialized equipment cannot feasibly be transported to the child, then the child may need to be evaluated at a particular site. It may be possible to perform part of the evaluation at that site and part where the child usually spends his or her time.

Who should be on the multidisciplinary team?

State and federal law should specify the composition of the multidisciplinary team. When assistive technology is an issue, or a possible issue for a child, the team should include an assistive technology specialist.

What kind of background and expertise is required to qualify as an assistive technology professional?

At present, there are no established parameters defining expertise in assistive technology, and no consistency regarding what constitutes such expertise. However, it seems clear that assistive technology experts need to understand aspects of physical, occupational and speech therapy. They also need to understand computer hardware and software, augmentative communication devices, and other equipment. Additionally, they need expertise in both education and technology.

BEST COPY AVAILABLE

Technology can be integrated effectively into a child's life in order to support the child's education. Realistically, no one person can possess the level of expertise necessary to cover all areas of assistive technology. Therefore, it is important that multidisciplinary assistive technology teams be created, or that assistive technology specialists form strong relationships with the child's other related services providers.

It would be helpful if states were to outline minimum requirements that must be met before a person could be identified as an assistive technology specialist. In some states, there is a master's degree program in assistive technology. Also, the Rehabilitation Engineering and Assistive Technology Society of North America (RESNA) has developed a credentialing program.* While certification examinations may have limitations, it can be helpful in establishing consistency and defining some parameters of what constitutes expertise in assistive technology. Consideration should be given to establishing early childhood as a sub-area of specialty.

*The RESNA credentialing program consists of three parts: 1) an application process that requires minimal levels of education and experience; 2) completion of a written examination testing basic knowledge and skills; and 3) a requirement that a person certified by RESNA abide by an extensive set of "Standards of Practice."

At what point is there enough evaluation?

This question is not limited to assistive technology alone. Clearly, children's changing needs warrant reevaluation periodically. How often depends on the child's needs and circumstances. The initial evaluation should be broad enough to assess each area of delay and assistive technology devices and services that can address this delay. When this has occurred, the evaluation can be considered complete.

Critical Element #2: The Provision of Training and Technical Assistance to a child and His or Her Family, and to Service Providers and Other Individuals Who Are Significantly Involved in the Care and Education of Children with Disabilities Who are in Need of Assistive Technology Devices and Services

Who will receive training and technical assistance?

Training and technical assistance should be provided to those persons who work directly with the child, including family members, day care providers, and those persons responsible for implementing the child's IFSP.

What kind of training and technical assistance should be provided to families and professionals?

Training will vary depending on the types of assistive technology used by the

child. Depending on the technology and on the role each family member and professional plays with the child, training and technical assistance will, at a minimum, encompasses the following:

- information regarding the device and how it works;
- information about how the device is programmed or set up;
- information about how to recognize and fix minor problems;
- information about how to incorporate the device into the child's home life;
- information about how to incorporate the device into the child's education program; and
- information about maintenance and identification of repair services in the community.

For example, if the child will be using an augmentative communication device, he or she will need to be taught how to use the device. The family and the speech pathologist will need to learn how to program the device and how to recognize and troubleshoot minor problems. If physical and/or occupational therapists are involved, they may need only basic training in how the device is used. If an educator is involved with the child, he or she will need to understand the purpose and function of the device and will need technical assistance to facilitate the child's use of the device as a substitute or supplement for speech during the education program.

Who is responsible for providing training and technical assistance?

Training should be written into the IFSP when appropriate. With a particular child, the assistive technology specialist or team should provide the training and technical assistance to the persons who will be working with the child. To the extent that related service providers such as occupational, physical, and speech/language therapists possess expertise in assistive technology, they should also be included as trainers. Training should be provided by persons with expertise in early childhood education. In the absence of a technology team or specialist, the IFSP team should formalize arrangements with the supplier of the technology, the university affiliated program, the state's Alliance for Technology Access affiliate, or another organization to provide the necessary training or follow up.

General training about assistive technology is often conducted by the state's technology program, Alliance for Technology Access affiliate, advocacy groups, school system assistive technology experts, and others.

Who will pay the expenses for training for family members (e.g. travel, hotel, child care)?

When assistive technology is included on a child's IFSP, training should be provided at no cost, if the family lives in a birth mandate state where the child would, in the absence of Part C, be eligible for Part B services. Otherwise, expenses should be handled as they are for other Part C services (e.g., in accordance with a sliding scale). Scholarships or stipends could be set up to assist families in meeting expenses.

What should be included in the training curriculum?

The content of training will depend upon its purpose. For a child who has been evaluated and for whom assistive technology has been included in the IFSP, training will focus on the use of that technology and the incorporation of that technology into the child's life. General training sessions could focus on the following:

- what assistive technology is and how it can benefit young children in areas such as seating and positioning, play, communication and learning;
- how to write IFSP goals that include the use of assistive technology, and how to integrate technology effectively into an educational program;
- funding sources for assistive technology;
- the special education process and the transition from Part C to Part B; and
- specific types of assistive technology (e.g., seating and positioning devices, augmentative communication devices, adapted toys).

Does the multidisciplinary team include professionals who are qualified in the area of assistive technology devices and services?

It is essential that the multidisciplinary team include professionals who are knowledgeable about assistive technology devices and services, or that the team have ready access to such experts. An assistive technology specialist should be involved at the outset because other team members may not immediately recognize that a child could benefit from assistive technology.

Consideration should be given, at the state and federal levels, to requiring the multidisciplinary team to include an assistive technology specialist.

Who should provide ongoing technical assistance?

The assistive technology specialist or team should be available to provide ongoing technical assistance. The state's Alliance for Technology Access affiliate may be another source of assistance. Additionally, states should consider setting up an assistive technology hotline, or a "warm line" (i.e. people call and leave a message which is returned within 24 hours) to handle routine questions about assistive technology. This could serve both as an effective introduction to assistive technology (e.g. an augmentative communication device is...) and as a useful component of follow up technical assistance (e.g., yes, it is normal for the device to make a funny noise when you turn it on...). Knowing that assistance is only a phone call away may make family members, day care providers, and service providers feel more comfortable with the technology, especially when the child is just beginning to use it.

Critical Element #3: The Acquisition of Technology Devices For Children

What does "acquisition" entail?

Acquisition includes purchasing, leasing or any other manner in which the device may be provided.

What are the timelines for procuring and providing services?

Timelines for assessment and IFSP implementation are probably addressed in state regulations implementing Part C. There do not need to be separate timelines for assessment and provision of assistive technology services. However, if states do not have any timelines governing assessment and IFSP implementation, they should revise their regulations to include such timelines. The timelines should be short to recognize the quickly-changing needs of infants and toddlers. The absolute outside timeline should be the timeline the state uses for Part B services.

If states have wildly varying timelines, consideration could be given to asking OSEP to define a uniform timeline for assessment and IFSP implementation.

Procurement timelines do not need to be specified in state law, but the lead agencies need to have the ability to procure assistive technology within the specified IFSP implementation timeline. It may be necessary for instance, to provide exceptions to the procurement process when infants and toddlers are involved, or to raise the amount of money lead agencies can spend without going through an external approval process. What should not be done under any circumstances, however, is to lengthen the IFSP implementation timeline or make exceptions to it because of problems with speedy procurement of assistive technology.

Are there any barriers to procuring technology?

Barriers occur well before the actual procurement process and include:

1) Barriers relating to lack of knowledge:

- lack of knowledge of service providers about assistive technology and its purposes/functions;
- lack of knowledge of parents about assistive technology and its purposes/functions;
- reluctance of parents to accept or utilize technology because the assistive technology is perceived as a replacement for skills the parents hoped their child would develop—in other words, accepting assistive technology may mean accepting the extent of the disabilities the child may have at a time when the parents are not yet ready to do so;
- concern on the part of parents about being perceived as seeming to demand too much from the lead agency or feeling that whatever is offered on the IFSP is fine because they do not understand the rights they and their infant or toddler have.

These barriers can be addressed by better training of staff providing services to infants and toddlers, and by training geared specifically to the parents of infants and toddlers. However, the paradox of offering more information and training to parents is that it may be offered at a time when the parents are overwhelmed by the diagnostic process and realization that the child has disabilities and by the issues affecting new parents in general (lack of sleep, altered schedules, need to find child care, etc.).

It is necessary to make information about assistive technology easily understandable and digestible for parents and to focus when possible on assistive technology that can be easily incorporated into the child's life. Information and training about assistive technology that can be easily incorporated into the child's life. Information and training about assistive technology should be available at levels ranging from basic to sophisticated, based on what the parents want.

2) Barriers regarding assessment:

- lack of/inadequate number of qualified assessors in general, and with respect to infants and toddlers specifically;
- no guidelines for what constitutes a competent assistive technology assessment.

These barriers can be addressed by state certification requirements for assistive technology specialists and by state requirements for what elements need to be addressed in an assessment. Depending on how certification requirements for other personnel (e.g. teachers, occupational therapists, physical therapists) are handled, it may make sense to have national standards. RESNA has developed and recently administered for the first time, a certification examination for assistive technology specialists. Whether this exam is appropriate or not, some guidelines or standards should be put in place, if not at the national level, then definitely at the state level.

3) Barriers regarding provision of assistive technology

- cost;
- lack of agreement among agencies about which agency is responsible;
- inefficient, lengthy procurement processes;
- lack of method of tracking purchase orders to ensure timely delivery of equipment;
- delay attributable to the company that makes the device.

While the last barrier is not one we have any control over (e.g. public release of the most recent version of the Dynavox was delayed for months while the company tried to address "bugs"), the other barriers can be addressed through policies and regulations.

States should, through regulation and through memoranda of understanding, clearly define the responsibilities of each agency involved in the IFSP process, including who is responsible for purchasing and providing assistive technology. When possible, Medicaid reimbursement should be sought.

Procurement processes and tracking of orders can be addressed through local school system and other agency policies and procedures.

What potential issues or conflicts are involved in using various funding streams, such as Medicaid and private insurance?

Use of private insurance benefits for third party reimbursement is tricky because of insurance caps and limitations regarding the frequency with which replacement devices may be procured. While parents may choose to allow the lead agency to seek third party reimbursement, they need to be well-informed about the impact such an action would have, and cannot be allowed to accrue any cost for doing so. While it may, from the state's public policy standpoint, make sense to encourage families to utilize private insurance benefits to defray the cost of assistive technology devices and services provided as part of an educational program, it does not make sense from an advocacy standpoint to do so. The problems inherent in using private insurance benefits do not arise with Medicaid, and there seems to be no reason not to pursue aggressively Medicaid reimbursement for assistive technology. However, lengthy Medicaid determination processes should not delay the provision of assistive technology to infants and toddlers.

Parents certainly can choose to obtain assistive technology privately with insurance coverage in order to obtain technology devices that will belong to the child. The lead agency should, consistent with OSEP Part B policy rulings, assume responsibility for maintenance and repair.

A possible problem with trying to obtain assistive technology coverage through private insurance is that the company may not cover the assistive technology. The parent would then face the issue of challenging the insurance company's denial of coverage. In no case should a parent's decision to obtain assistive technology privately affect the agencies' responsibility to provide assistive technology to infants and toddlers who need it as part of their IFSPs. The agencies should be prepared to provide the device or a loaner to the child in a timely manner.

It is important to sort through the potential conflict between making the "medically necessary" argument that insurance companies may require, and the "educationally necessary" standard of the IDEA. The fact that a device is determined to be medically necessary should not result in a refusal on the part of the school system to provide the device to the child if he or she goes on to receive Part B services.

What provisions are made for loan of and/or use of used equipment for trial before purchase?

States and localities vary in their ability to loan equipment or provide used equipment for trial purposes. This is truly a critical issue; effort should be directed by states to develop equipment lending programs, perhaps in conjunction with agencies such as Easter Seals and with vendors. For instance, in the state of Maryland there is no central equipment loan program that can fully address the need of children (and adults) to borrow equipment. The issue is complicated by varying approaches to the purchase and use of assistive technology by school systems; some schools purchase devices that remain in the school when the child leaves, and other schools allow the device to move with the child. Uniform policies

BEST COPY AVAILABLE

within school systems would be helpful to address this issue, although a state policy is probably necessary to address what happens to assistive technology when children move from one school system to another. Also, for infants and toddlers, policies need to be in place if the equipment is purchased by agencies other than the school system.

Who owns the equipment?

If the parents purchase the equipment or obtains the equipment with insurance or Medicaid coverage, the family owns the equipment. If the school system purchases the equipment, the school system owns it. As discussed above, depending on whether the equipment is funded from a central budget or a particular school budget, issues arise regarding the portability of the equipment when the child leaves the school he or she attended when the equipment was purchased. Again, policies need to be developed at the state level to address provision and ownership of assistive technology for infants and toddlers. If agencies other than the school system purchase assistive technology for infants and toddlers, policies need to be in place regarding ownership of equipment.

What kinds of provisions are made for transfer of equipment when transferring or transitioning to other services?

Again, the issue of transfer or equipment between school programs should be addressed in local school system and probably state policies. Local and state policies also need to be in place to govern the provision of students transitioning from Part C to Part B services. The assistive technology that these children have been using should automatically transfer with them when they begin Part B services, if such assistive technology is necessary for them to receive a free appropriate public education. Therefore, the assistive technology should be included on the IEP when it is developed and should be able to be implemented immediately. Policies should be in place to guarantee that there is no break in the child's use of the equipment or the provision of the service. This is particularly important if the assistive technology has been provided by an agency other than the school system and the agency expects to take the device(s) from the child when he or she turns three. Possible approaches would include: 1) having the school system purchase the equipment from the agency; or 2) explicitly planning for the IEP-driven assistive technology devices and services well enough in advance so that if the school system has to provide the equipment currently provided by another agency, it can obtain the equipment and provide it to the child without a break during the transition from Part C to Part B.

Is assistive technology part of the state recommended IFSP form, if one exists?

Assistive technology should be listed on each state's recommended IFSP form if such a form exists. If not, then each local jurisdiction's IFSP form should include assistive technology in its list of services. This is an essential element of ensuring that a child's need for assistive technology is considered.

Critical Element #4: Choosing, Adapting, Repairing, Maintaining, and Customizing Assistive Technology Devices for Children

Which agency is responsible for paying for repairs?

States should have policies in place governing responsibility for repairs of assistive technology used by infants and toddlers. While there is no question that the school system is responsible for repairing assistive technology used by school-age, Part B-eligible students, the involvement of other agencies in the provision of Part C services warrants clearly defined responsibilities for each agency. For instance, if an agency other than the school system purchases the technology, it might be preferable for that agency to have a memorandum of understanding with the school system shifting the responsibility to the school system, if for example, the purchasing agency has no in-house assistive technology expertise and the school system does.

How should approved repair vendors be identified?

For repairs requiring more than in-house expertise, the lead agency and the school system should maintain a list of contact persons at the company that makes the equipment, the vendors of the equipment, local repair shops that may be able to fix the equipment, and the state technology center if it is able to perform repairs.

What are the responsibilities of families in maintenance of equipment; getting equipment repaired; and reporting broken equipment, and how will substitute equipment be made available during the repair period?

While families should be responsible for basic maintenance (e.g., charging batteries), and for reporting broken equipment to the IFSP case manager or service coordinator, families should not be responsible for getting equipment repaired. Repairs should be handled through the IFSP service coordinator. The agency responsible for the provision of the assistive technology should be responsible for providing substitute equipment, which could come from a variety of places, including an equipment bank maintained by the agency, the state's technology center, or the manufacturer of the technology. It may not be possible to provide the same device as a substitute. Therefore, during the development of the child's IFSP, consideration should be given to identifying the steps to be taken if the technology needs repair, how a substitute will be procured, and what other technology options would provide an acceptable substitute to the child's device on a temporary basis.

What are the qualifications and background of professionals and vendors involved in this process?

The qualifications of vendors involved in the process of choosing, adapting, repairing, maintaining, and customizing assistive technology for children may be difficult to determine. In some cases, there may only be one vendor of a particular

BEST COPY AVAILABLE

device, and agency personnel responsible for implementing the IFSP may have no choice but to deal with that vendor, regardless of his or her qualifications.

The qualifications of the agency personnel involved in this process, however, can be defined by state law, or even by OSEP. For instance, a state could require that persons involved in this process be accredited through RESNA or demonstrate the equivalent level of expertise in some other way.

Who coordinates the functions listed above?

The IFSP service coordinator should coordinate these functions with assistance from the assistive technology specialist and the other related service providers. Alternatively, if the multidisciplinary team includes an assistive technology specialist, that person could be delegated the responsibility of coordinating the assistive technology functions, with assistance from the other related service providers.

Are parents sufficiently involved in the entire process?

Parents should certainly be involved in the process of choosing and adapting equipment, and in routine maintenance. They should also be involved in the process of choosing acceptable substitute equipment in the event that the child's device needs to be repaired. However, the parents should not have to be involved in the repair process.

Should equipment be returned when it is no longer in use?

The equipment belongs to the agency that purchased it. If the device is no longer useful to the child, it should be returned to that agency. Alternatively, a centralized equipment bank could be developed. State education agencies should take the lead in organizing equipment banks and equipment loan programs that could be used by Part C providers and school systems throughout the state.

Critical Element #5: The Coordination or Use of Services or Therapies with Assistive Technology Devices

Who is responsible for overall coordination and integration of assistive technology devices and services into the child's plan?

Coordination and integration are two separate functions. While the IFSP service coordinator is responsible for coordinating the elements of the IFSP, the actual service providers should be responsible for integrating the devices and services into the child's plan and program. Depending on the child's needs and the specific program the child receives, an occupational therapist, physical therapist, speech pathologist, or educator might be the person who plays the primary role in integrating the devices and services into the program. Or, each of the service providers may play an important role in utilizing assistive technology devices and services;

in that case, the providers should co-treat or meet regularly to coordinate their efforts, and the service coordinator could be the person responsible for setting up those meetings. While the assistive technology specialist should be available to provide information, training, and assistance to the service providers, the assistive technology specialist probably should not be responsible for the implementation of the plan, since the technology is used to support the child's education, rather than being an end in and of itself.

What are the qualifications of the coordinator?

Part C requires that service coordinators possess knowledge of the nature and scope of services that are available from all service providers that are participating in the early intervention system. However, they are not specifically required to be knowledgeable or experienced in the area of assistive technology. Either service coordinators should become familiar with assistive technology to the extent they are familiar with the nature and scope of other services, or each lead agency should have an identified assistive technology expert who has this knowledge. The specialist must have the knowledge of the scope of assistive technology services ranging from seating and positioning to communication.

The service coordinator or assistive technology specialist should also be able to provide information to the family and service providers regarding services available through organizations such as the state technology center and the state's Alliance for Technology Access affiliate.

Are parents and other significant individuals in a child's life involved in the entire process from assessment to implementation?

Parents and other individuals who have significant involvement in a child's life must have the opportunity to be involved in the entire process from assessment to implementation and follow up. Parents are important members of the multidisciplinary team and should be part of the decision-making process regarding the appropriate assistive technology for their child. Parent involvement in this process will increase the likelihood that the technology that is selected will be used and will fit comfortably into the lives of the family members.

History of Laws Concerning Assistive Technology in the Education of Children with Disabilities

1973 - Rehabilitation Act

Section 504:
"requires that Public Schools make *reasonable accommodations* for all students with disabilities when the disability has a significant impact on one or more major life activities." A 504 Plan describes all necessary accommodations and may include AT devices and services.

1975 - Education for All Handicapped Children Act (EHA) PL 94-142 Part B

*Mandates **Least Restrictive Environment** (LRE) - "Special classes, separate schooling or other removal of handicapped children from the regular educational environment occurs only when the nature or severity of the handicap is such that education in regular classes with the use of supplementary aids and service cannot be achieved satisfactorily."

*Mandates **Individualized Education Plan** (IEP).

*Does not directly refer to assistive technology.

*State and local agencies have a responsibility to ensure that eligible children with handicaps receive **Free Appropriate Public Education** (FAPE) which includes the provision of special education and related services without charge, in conformity with an IEP.

*Defines **'special education'** as "specially designed instruction, at no cost to the parent, to meet the unique needs of a handicapped child..."

*Defines **'related services'** as "transportation and such developmental, corrective, and other supportive services as are required to assist a handicapped child to benefit from special education." Gives examples of 13 services, but states it is not an exhaustive list.

1986 - Education of the Handicapped Act Amendments Part H of PL 99-457

*Mandates Early Intervention Services for infants and toddlers.

*Services are implemented through the Individualized Family Service Plan (IFSP).

*Applied earlier laws to preschoolers and families.

1988 - Technology-Related Assistance for Individuals with Disabilities Act - PL 100-407

*Defines **Assistive Technology Device** (ATD) as "any item, piece of equipment or product system, whether acquired commercially off the shelf, modified or customized, that is used to increase, maintain, or improve the functional capabilities of children with disabilities."

*Defines **Assistive Technology Services** (ATS) as "Any service that directly assists a child with a disability in the selection, acquisition, or use of an assistive technology device (ATD). The term includes:

(a) The evaluation of the needs of a child with a disability, including a functional evaluation of the child in the child's customary environment;

(b) Purchasing, leasing, or otherwise providing for the acquisition of assistive technology devices by children with disabilities;

(c) Selecting, designing, fitting, customizing, adapting, applying, retaining, repairing, or replacing of assistive technology devices;

(d) Coordinating and using other therapies, interventions, or services with assistive technology devices, such as those associated with existing education and rehabilitation plans and programs;

(e) Training or technical assistance for a child with a disability, or if appropriate, that child's family; and

(f) Training or technical assistance for professionals (including individuals providing education or rehabilitation services), employers, or other individuals who provide services to, employ, or are otherwise substantially involved in the major life functions of individuals with disabilities."

1990 - Americans with Disabilities Act (ADA) - PL 101-336

1990 - Office of Special Education Programs (OSEP) Policy Letter

*Uses the term "assistive technology" to include both ATD and ATS.

*States, "under EHA-B, assistive technology could qualify as 'special education,' 'related services,' or 'supplementary aids and services.' "

*States, "if the participants on the IEP team determine that a child with handicaps requires assistive technology in order to receive FAPE, and designate such assistive technology as either special education or a related service, the child's IEP must include a specific statement of such services, including the nature and amount of such services."

*States, "Assistive technology can be a form of supplementary aid or service utilized to facilitate a child's education in a regular educational environment...must be included in a child's IEP."

*States, "In sum, a child's need for assistive technology must be determined on a case-by-case basis and could be special education, related services, *or* supplementary aids and services for children with handicaps who are educated in regular classes."

1991 - Individuals with Disabilities Education Act (IDEA) - PL 101-476

*Reauthorization of PL 94-142.

*Added definitions of assistive technology in amendments to original law.

*AT needs must be considered within the context of other education needs.

*AT needs must be identified on an individualized basis.

*Identification of AT needs must involve family members and a multidisciplinary team.

*Family or other IEP team members can request additional evaluations or an independent assessment to determine assistive technology needs.

*Cost or unavailability of equipment cannot be used as rationale for denying assistive technology devices or services.

*Families have the right to appeal the denial of assistive technology devices or services.

1991 - Office of Special Education Programs (OSEP) Policy Letter

*Addresses the issue of taking AT home from school.

*States "if the IEP team determines that a particular assistive technology item is required for home use in order for a particular child to be provided FAPE, the technology must be provided to implement the IEP."

*States "local school board may not unilaterally change the statement of special education and related services contained in the IEP for a child."

*States, "no delay is permissible between the time a child's IEP in finalized and when special education and related services are provided."

*Infers that "a school board cannot change a child's IEP, refuse to pay for it, or in any way refuse or slow down implementation."

1993 - Office of Special Education Programs (OSEP) Policy Letter

*Defined the responsibilities of a school district to include providing hearing aids for a child who requires them in order to access a FAPE.

1994 - Office of Special Education Programs (OSEP) Policy Letter

*Defined the responsibilities of a school district for liability for a family-owned device which is used at school.

1997 - Individuals with Disabilities Education Act of 1997 (IDEA)

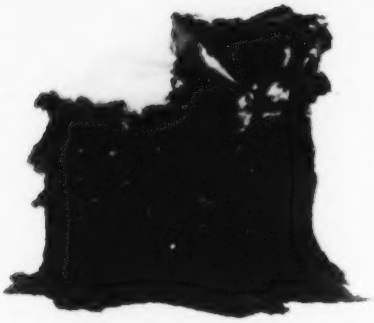
*IEP team must consider whether a child requires assistive technology devices or services.

*IEP team must consider the communication needs of all children.

Appendix D

About Project KITE and PACER Center

About Project KITE



Project KITE (Kids Included through Technology are Enriched) is a federally funded program at the PACER Center in Minneapolis, MN. It is dedicated to giving all children, regardless of culture, income level, or disability, the opportunity to learn using computers and assistive technology.

KITE has trained teams of parents and teachers of special needs children to integrate technology in their homes and classrooms to foster inclusion of children with special needs in school and family life and to build self-esteem. As part of the training, the teams of teachers and parents develop and implement home and classroom activities which 1) integrate technology, and 2) support curricular and child objectives. Throughout the training, KITE has provided computers, software, and assistive devices for participants to try in their own environments and with their own children. In addition, KITE staff offers technical support for classrooms and families involved in the program.

To date, KITE activities have assisted more than 400 preschoolers. Experiences with young learners, their teachers, and their parents corroborated outside research which shows that integration of technology in early learning environments supports inclusion and self-esteem.

This booklet offers a synopsis of KITE training for a wider audience of professionals who work with children ages 3-8. A corresponding videotape is available to help parents understand the benefits of using assistive technology to support self-expression, communication, social interaction, and the education of their youngsters who have special needs. In addition, a complete curriculum and consultative support for its implementation are available to professionals who would like to replicate the KITE model in other geographic locations.

About PACER Center

PACER (Parent Advocacy Coalition for Educational Rights) is a nonprofit organization that serves families of children and adults with disabilities and professionals. PACER works through the coalition efforts of families representing 20 disability organizations. PACER has local, state and national projects.

Established in 1977 and staffed primarily by parents of youth with disabilities, and by persons with disabilities, PACER carries out the philosophy of "parents helping parents" through workshops, individual assistance and written information. PACER's services reach families of children and adults with *all* disabilities (physical, mental, learning and emotional).

PACER's programs help parents become informed and effective representatives for their children in early childhood, school-age and vocational settings. Through knowledge about laws, resources and parents' rights and responsibilities, families are better equipped to work with agencies to obtain appropriate services for their sons and daughters.

Appendix E

Other Organizations

1. Alliance for Technology Access
2. Organizations Funded under the Technology-Related Assistance for Individuals with Disabilities Act of 1988
3. Parent Training and Information Centers

Alliance for Technology Access

The Alliance for Technology Access (ATA) is a network of community-based resource centers dedicated to providing information and support services to children and adults with disabilities, and increasing their use of standard and assistive technologies.

National Office:
2175 E. Francisco Blvd., Suite L
San Rafael, CA 94901
(415) 455-4575
(415) 455-0491 (TTY)
E-mail: atainfo@ataccess.org

Resource Centers

ALABAMA

Birmingham Alliance for Technology Access Center
Birmingham Independent Living Center
206 13th Street South
Birmingham, AL 35233-1317
205/251-2223 (Voice/TTY)
E-mail: dkessle1@ix.netcom.com

Technology Assistance for Special Consumers
P.O. Box 443
Huntsville, AL 35804
205/532-5996 (Voice/TTY)
E-mail: tasc@traveller.com

ALASKA

Alaska Services for Enabling Technology
P.O. Box 6485
Sitka, AK 99835
907/747-7615
E-mail: asetseak@aol.com

ARIZONA

Technology Access Center of Tucson
P.O. Box 13178
4710 East 29th Street
Tucson, AZ 85732-3178
520/745-5588, ext. 412
E-mail: tactaz@aol.com

ARKANSAS

Technology Resource Center
c/o Arkansas Easter Seal Society
3920 Woodland Heights Road
Little Rock, AR 72212-2495
501/227-3600
E-mail: atrce@aol.com

CALIFORNIA

Center for Accessible Technology
2547 8th St., 12-A
Berkeley, CA 94710-2572
510/841-3224 (Voice/TTY)
E-mail: cforat@aol.com
Web: www.el.net/CAT

Computer Access Center
P. O. Box 5336
Santa Monica, CA 90409
310/338-1597
E-mail: cac@cac.org
Web: www.cac.org

Sacramento Center for Assistive Technology
701 Howe Avenue, Suite E-5
Sacramento, CA 95825
916/927-7228
E-mail: scat@quiknet.com
Web: www.sanjuan.edu/scat/index.html

SACC * Assistive Technology Center
Simi Valley Hospital, North Campus
P. O. Box 1325
Simi Valley, CA 93062
805/582-1881
E-mail: dssaccca@aol.com

Special Technology Center
590 Castro Street
Mountain View, CA 94041
415/961-6789
E-mail: stcca@aol.com

Team of Advocates for Special Kids
100 W. Cerritos Ave.
Anaheim, CA 92805-6546
714/533-8275
E-mail: taskca@aol.com

FLORIDA

CITE, Inc. - Center for Independence, Technology & Education
215 E. New Hampshire St.
Orlando, FL 32804
407/898-2483
E-mail: comcite@aol.com

GEORGIA

Tech-Able, Inc.
1140 Ellington Dr.
Conyers, GA 30207
770/922-6768
E-mail: techable@onramp.net
Web: www.onramp.net/tech-able

HAWAII

Aloha Special Technology Access Center
710 Green St.
Honolulu, HI 96813
808/523-5547
E-mail: stachi@aol.com
Web: www.aloha.net/~stachi

IDAHO

United Cerebral Palsy of Idaho, Inc.
5530 West Emerald
Boise, ID 83706
(208) 377-8070
E-mail: ucpidaho@aol.com

ILLINOIS

Northern Illinois Center for Adaptive Technology
3615 Louisiana Road
Rockford, IL 61108-6195
815/229-2163
E-mail: ilcat@aol.com

Technical Aids & Assistance for the Disabled Center
1950 West Roosevelt Road
Chicago, IL 60608
312/421-3373(Voice/TTY)
800/346-2939
E-mail: taad@interaccess.com
Web: homepage.interaccess.com/users/~taad

INDIANA

Assistive Technology Training and Information Center
ATTIC: A Resource Center on Independent Living
P.O. Box 2441
Vincennes, IN 47591
812-886-0575 (Voice/TTY)
E-mail: inattic1@aol.com

KANSAS

Technology Resource Solutions for People
1710 West Schilling Road
Salina, KS 67401
913/827-9383
E-mail: trspks@aol.com

KENTUCKY

Bluegrass Technology Center
169 N. Limestone Street
Lexington, KY 40507
606/255-9951
E-mail:
bluegrass@uky.campus.mci.net
Web: www.kde.state.ky.us/assistive/Assistive_Technology.html

Enabling Technologies of Kentuckiana
Louisville Free Public Library
301 York Street
Louisville, KY 40203-2257
(502) 574-1637
(800) 890-1840 (KY)
E-mail: entech@iglou.com
Web: www.kde.state.ky.us/assistive/Assistive_Technology.html

AbleTech Assistive Technology Resource Center
Covington, KY 41011
(606) 491-8700
E-mail:
Web: www.kde.state.ky.us/assistive/Assistive_Technology.html

Western Kentucky Assistive Technology Consortium
PO Box 266
Murray, KY 42071
(502) 759-4233
E-mail:
katc@mursuky.campus.mci.net
Web: www.kde.state.ky.us/assistive/Assistive_Technology.html

MARYLAND

Learning Independence Through Computers, Inc. (LINC)
28 E. Ostend St., Suite 140
Baltimore, MD 21230
410/659-5462 (Voice)
410/659-5469 (TTY)
E-mail: lincmd@aol.com
Web: www.linc.org

MASSACHUSETTS

Massachusetts Special Technology Access Center
12 Mudge Way 1 6
Bedford, MA 01730-2138
617/275-2446
E-mail: mastac@ma.ultranet.com
Web: www.ultranet.com/~mastac/

MICHIGAN

Living & Learning Resource Centre
PIAM
1023 S. US 27 St. Johns, MI 48879-2424
(517) 224-0333
800/833-1996(MI)
E-mail: llrcmi@aol.com

MINNESOTA

PACER Computer Resource Center
4826 Chicago Avenue South
Minneapolis, MN 55417-1098
612/827-2966 V; 612/827-7770 TTY
E-mail: pacercrc@aol.com
Web: www.pacer.org/crc/crc.htm

MISSOURI

Technology Access Center
12110 Clayton Road
St Louis, MO 63131-2599
314/569-8404 (Voice)
314/569-8446 (TTY)
E-mail: mostltac@aol.com

MONTANA

Parents, Let's Unite for Kids
MSU-B/SPED Bldg., Room 267
1500 N. 30th Street
Billings, MT 59101-0298
406/657-2055
800/222-7585 (MT)
E-mail: plukmt@aol.com

NEW JERSEY

Computer Center for People With disAbilities
c/o Family Resource Associates, Inc.
35 Haddon Avenue
Shrewsbury, NJ 07702-4007
908/747-5310
E-mail: ccdanj@aol.com

Center for Enabling Technology
622 Route 10 West, Suite 22B
Whippany, NJ 07981
201/428-1455 (Voice)
201/428-1450 (TTY)
E-mail: cetnj@aol.com

BEST COPY AVAILABLE

NEW YORK

Techspress Resource Center for Independent Living
P.O. Box 210
401-409 Columbia Street
Utica, NY 13503-0210
315/797-4642
E-mail: lana.gossin@rcil.com

NORTH CAROLINA

Carolina Computer Access Center
Metro School
700 East Second Street
Charlotte, NC 28202-2826
704/342-3004
E-mail: ccacnc@aol.com
Web: www.charweb.org/health/healthindex.html

OHIO

Technology Resource Center
301 Valley St.
Dayton, OH 45404-1840
513/222-5222
E-mail: trcdoh@aol.com

RHODE ISLAND

TechACCESS Center of Rhode Island
300 Richmond St.
Providence, RI 02903-4222
401/273-1990
800/916-TECH (RI)
E-mail: accessri@aol.com or techaccess@ids.net

TENNESSEE

East Tennessee Technology Access Center, Inc.
3525 Emory Road, NW
Powell, TN 37849
423/947-2191 (Voice/TTY)
E-mail: etstactn@aol.com
Web: www.korrnet.org/ettac/

Technology Access Center of Middle Tennessee
Fountain Square, Suite 126
2222 Metrocenter Blvd.
Nashville, TN 37228
615/248-6733 (Voice/TTY)
800/368-4651
E-mail: tactn@aol.com

West Tennessee Special Technology Access Resource Center (STAR)
P.O. Box 3683
60 Lynoak Cove Jackson, TN 38305
901/668-3888
800/464-5619
E-mail: mdoumitt@starcenter.tn.org
Web: www.starcenter.tn.org

UTAH

The Computer Center for Citizens with Disabilities
c/o Utah Center for Assistive Technology
2056 South 1100 East
Salt Lake City, UT 84106
801/485-9152 (Voice/TTY)
E-mail: cboogaar@usoe.k12.ut.us

VIRGIN ISLANDS

Virgin Islands Resource Center for the Disabled, Inc.
P.O. Box 1825
St. Thomas, VI 00803
809/777-2253

VIRGINIA

Tidewater Center for Technology Access
Special Education Annex
960 Windsor Oaks Blvd. Blvd.
Virginia Beach, VA 23462
(757) 474-8650
E-mail: tcta@aol.com

WEST VIRGINIA

Eastern Panhandle Technology Access Center, Inc.
P.O. Box 987
300 S. Lawrence St.
Charles Town, WV 25414
304/725-6473
E-mail: eptac@earthlink.net

State Projects Funded under the Technology-Related Assistance for Individuals with Disabilities Act of 1988

as amended and administered by the National Institute on Disability and Rehabilitation Research

Many states also have regional assistive technology resource centers. To find out if there is a center near you, call your state's Tech Act project or contact RESNA, 1700 N. Moore St., Suite 1540, Arlington, VA 22209; (703) 524-6686 (Voice); (703) 524-6639 (TTY);(703) 524-6630 (Fax); resnata@resna.org (E-mail).

Alabama Statewide Technology Access and Response Project (STAR) System for Alabamians with Disabilities
2125 East South Boulevard
P.O. Box 20752 6th
Montgomery, AL 36120-0752
Phone: (334) 613-3480
Phone: (800) STAR656 (In-state only)
Fax: (334) 613-3485
E-mail: alstar@mont.mindspring.com
Web: www.mindspring.com/~alstar/

Assistive Technologies of Alaska
1016 West 6th Suite 105
Anchorage, AK 99501
Info/referral: (907) 563-0138 (V/TTY)
Fax: (907) 274-5605
E-mail:mshiffere@espresso.state.ak.us
Web: www.corcom.com/ata/index.html

American Samoa Assistive Technology Project
Division of Vocational Rehabilitation
Department of Human Resources
Pago Pago, American Samoa 96799
Project Director: (684) 699-1529
TTY: (684) 233-7874
Fax: (684) 699-1376

Arizona Technology Access Program (AZTAP)
Institute for Human Development
Northern Arizona University
P.O. Box 5630
Flagstaff, AZ 86011
Phone: (520) 523-7035
TTY: (520) 523-1695
Fax: (520) 523-9127
E-mail: daniel.davidson@nau.edu
Web: www.nau.edu/~ihd/aztap.html

Arkansas Increasing Capabilities Access Network
Department of Education
Vocational and Technical Education Division
Arkansas Rehabilitation Services
2201 Brookwood Drive, Suite 117
Little Rock, AR 72202
Phone: (501) 666-8868 (V/TTY)
Phone: (800) 828-2799 (V/TTY; In-state only)
Fax: (501) 666-5319
E-mail: 102503.3602@compuserve.com
Web: www.arkansas-ican.org

California Assistive Technology System
California Department of Rehabilitation (Lead Agency)
830 K Street, Room 102
Sacramento, CA 95814
Mailing Address:
P.O. Box 944222
Sacramento, CA 94244-2220
Info/referral: (800) 390-2699
Phone: (916) 324-3062 (Voice/TTY)
Fax: (916) 323-0914
E-MAIL:
doroa.ccampisi@hw1.cahwnet.gov
E-mail: http://www.catsca.com

Colorado Assistive Technology Project
Rocky Mountain Resource and Training Institute
1391 N. Speer Boulevard Suite 350
Denver, CO 80204
Phone: (303) 534-1027
TTY: (303) 534-1063
Fax: (303) 534-1075
E-mail: cathy.bodine@uchsc.edu

Connecticut Assistive Technology Project
Bureau of Rehabilitation Services
10 Griffin Road North
Windsor, CT 06095
Phone: (860) 298-2014
TTY: (860) 298-2018
Fax: (860) 298-9590
E-mail: cttap@aol.com
Web: www.ucc.uconn.edu/~techact/

Delaware Assistive Technology Initiative (DATI)
Applied Science & Engineering Laboratories
University of Delaware dupont Hospital for Children
1600 Rockland Road, Room 154
P.O. BOX 269
Wilmington, DE 19899-0269
Phone: (302) 651-6790
TTY: (302) 651-6794
Fax: (302) 651-6793
E-mail: dati@asel.udel.edu
Web: www.asel.udel.edu/dati/

D.C. Partnership for Assistive Technology
801 Pennsylvania Avenue, S.E.
Suite 300
Washington, DC 20003
Phone: (202) 546-9163
TTY: (202) 546-9168
Fax: (202) 546-9169
E-mail: tonifis@dcpat.org

Florida Alliance for Assistive Service and Technology
1020 E. Lafayette St., Suite 110
Tallahassee, FL 32301-4546
Phone/TTY: (850) 487-3278
Fax: (850) 487-2805
E-mail: faast@freenet.scri.fsu.edu

Georgia Tools for Life
Division of Rehabilitation Services
2 Peachtree Street NW, Suite 35-413
Atlanta, GA 30303-3166
Phone: (404) 657-3084
TTY: (404) 657-3085
Fax: (404) 657-3086
TOOLS FOR LIFE: (800) 578-8665 (in-state)
E-mail:
102476.1737@compuserve.com

Guam System for Assistive Technology
University Affiliated Program - Developmental Disabilities
House #12 Dean's Circle
University of Guam
UOG Station
Mangilao, Guam 96923
Phone: (671) 735-2493
Fax: (671) 734-5709
TTY: (671) 734-8378
E-mail: uapservi@uog.edu

Hawaii Assistive Technology Training and Services (HATTS)
414 Kuwili Street, Suite 104
Honolulu, HI 96817
Phone/TTY: (808) 532-7110
Fax: (808) 532-7120
E-mail: bfl@pixi.com

Idaho Assistive Technology Project
129 W. Third Street
Moscow, ID 83843
Phone/TTY: (208) 885-3559
Fax: (208) 885-3628
E-mail: seile861@uidaho.edu

Illinois Assistive Technology Project
528 S. 5th Street
Suite 100
Springfield, IL 62701
Phone: (217) 522-7985
TTY: (217) 522-9966
Fax: (217) 522-8067
E-mail: gunther@midwest.net

Indiana ATTAIN (Accessing Technology Through Awareness In Indiana) Project
1815 N. Meridian, Suite 200
Indianapolis, IN 46202
Phone: (317) 921-8766 (Marion County)
Phone: (800) 528-8246 (In State Only)
TTY: (800) 743-3333 (National/In State Only)
Fax: (317) 921-8774
E-mail: cfulford@vunet.vinu.edu

Iowa Program for Assistive Technology
Iowa University Affiliated Program
University Hospital School
Iowa City, IA 52242-1011
Phone: (800) 331-3027 (Voice/TTY; National)
Fax: (319) 356-8284
E-mail: mary_quigley@uiowa.edu
jane_gay@uiowa.edu

Assistive Technology for Kansans Project
2601 Gabriel
P.O. Box 738
Parsons, KS 67357
Phone: (316) 421-8367 or
(800) KAN DO IT
Fax/TTY: (316) 421-0954
E-mail: ssack@parsons.isi.ukans.edu

Kentucky Assistive Technology Services Network
Charles McDowell Rehabilitation Center
8412 Westport Road
Louisville, KY 40242
Phone: (502) 327-0022
Toll-free in-state only: (800) 327-5287 (V/TTY)
Fax: (502) 327-9974
TTY: (502) 327-9855
E-mail: katsnet@iglou.com
Web: www.katsnet.org

Louisiana Assistive Technology Access Network
P.O. Box 14115
Baton Rouge, LA 70898-4115
Phone: (504) 925-9500 (V/TT)
TTY: (800) 270-6185 (V/TT)
Fax: (504) 925-9560
E-mail: latanstate@aol.com

Maine Consumer Information and Technology Training Exchange (Maine CITE)
Maine CITE Coordinating Center
Education Network of Maine
46 University Drive
Augusta, ME 04330
Phone: (207) 621-3195 (V/TTY)
Fax: (207) 621-3193
E-mail:
kpowers@maine.caps.maine.edu

Maryland Technology Assistance Program
Governor's Office for Individuals with Disabilities
300 W. Lexington Street, Box 10
Baltimore, MD 21201
Phone: (410) 333-4975 (Voice/TTY)
Fax: (410) 333-6674
E-mail: mdtap@clark.net
Web: www/clark.net/pub/mdtap

Massachusetts Assistive Technology Partnership
MATP Center
Children's Hospital
1295 Boylston Street, Suite 310
Boston, MA 02115
Info/referral: (617) 355-7153
Toll-free in-state only: (800) 848-8867 (V/TTY)
TTY: (617) 355-7301
Fax: (617) 355-6345
E-mail:
brewer_ju@a1.tch.harvard.edu

Michigan Tech 2000
Michigan Assistive Technology Project
3815 West St. Joseph Hwy.
Lansing, MI 48917-3623
Phone: (517) 334-6502
TTY: (517) 334-6499
Fax: (517) 373-0565
E-mail: twistm@mrs.mjc.state.mi.us

Minnesota STAR Program
300 Centennial Building
658 Cedar Street
St. Paul, MN 55155
Phone: (800) 657-3862 (Voice/In State Only)
Phone: (612) 296-2771
TTY: (612) 296-8478
Fax: (612) 282-6671
E-mail: mnstars@edu.gte.net
http://www.state.mn.us/ebranch/admin/assistivetechnology.html

Mississippi Project START
P.O. Box 1698
Jackson, MS 39215-1000
Info/referral: (601) 987-4872
Phone: (800) 852-8328 (Voice/TTY; In-state) Fax: (601) 364-2349
E-mail: spower@netdoor.com

BEST COPY AVAILABLE

Missouri Assistive Technology Project
4731 South Cochise, Suite 114
Independence, MO 64055-6975
Phone: (800) 647-8557 (In-state only)
Phone: (816) 373-5193 (Voice)
TTY: (816) 373-9315
Fax: (816) 373-9314
E-mail: matpmo@qni.com

MONTECH
MUARID, The University of Montana
634 Eddy Avenue
Missoula, MT 59812
Phone: (406) 243-5676
TTY (National): (800) 732-0323
Fax: (406) 243-4730
E-mail: leech@selway.umt.edu

Nebraska Assistive Technology Project
301 Centennial Mall South
P.O. Box 94987
Lincoln, NE 68509-4987
Info/referral: (402) 471-2447 (V/TTY)
Phone: (800) 742-7594 (In-state only)
Fax: (402) 471-0117
E-mail:
mschultz@nde4.nde.state.ne.us
Web: www.nde.state.ne.us/atp/techome.html

Nevada Assistive Technology Collaborative
Rehabilitation Division
Community Based Services
711 South Stewart Street
Carson City, NV 89710
Phone: (702) 687-4452
TTY: (702) 687-3388
Fax: (702) 687-3292
E-mail: nvreach@powernet.net
Web: www.state.nv.us.80

New Hampshire Technology Partnership Project
Institute on Disability/UAP
#14 Ten Ferry Street
The Concord Center
Concord, NH 03301
Info/referral: (603) 224-0630 (V/TTY)
Fax: (603) 226-0389
E-mail: mjpawlek@christa.unh.edu

New Jersey Technology Assistive Resource Program
135 East State Street
CN 398
Trenton, NJ 08625
Phone: 609) 292-7498
TTY: (800) 382-7765
Fax: (609) 292-8347
E-mail: njdvr@gteens.com

New Mexico Technology Assistance Program
435 St. Michael's Drive, Building D
Santa Fe, NM 87503
Info/referral: (800) 866-ABLE (V/TTY)
Fax: (505) 827-3746
E-mail: nmdvrtap@aol.com

New York State TRAID Project
Office of Advocate for Persons with Disabilities
One Empire State Plaza, Suite 1001
Albany, NY 12223-1150
Project Director: (518) 474-2825
Phone: (800) 522-4369 (Voice/TTY; In-state)
TTY: (518) 473-4231
Fax: (518) 473-6005
E-mail: leffing w@emi.com

North Carolina Assistive Technology Project
Department of Human Resources
Division of Vocational Rehabilitation Services
1110 Navaho Drive, Suite 101
Raleigh, NC 27609-7322
Info/referral: (800) 852-0042 (Nat'l)
Phone: (919) 850-2787 (Voice/TTY)
Fax: (919) 850-2792
E-mail: rickic@mindspring.com
Web: www.mindspring.com/~ncatp

North Dakota Interagency Program for Assistive Technology (IPAT)
P.O. Box 743
Cavalier, ND 58220
Phone: (701) 265-4807 (Voice/TTY)
Fax: (701) 265-3150
E-mail: lee@pioneer.state.nd.us
Web: www.ndipat.org

Commonwealth of the Northern Mariana Islands Assistive Technology Project
Developmental Disabilities Planning Office
Office of the Governor, Building 1312
P.O. Box 2565
Saipan, MP 96950
Phone/TTY: (670) 322-3014
Fax: (670) 322-4168
E-mail: dd.council@saipan.com

Ohio TRAIN
Ohio Super Computer Center
1224 Kinnear Road
Columbus, OH 43212
Information Specialist: (614) 292-2426
Phone/TTY: (614) 292-2426
Toll-free in-state only: (800) 784-3425 (V/TTY)
TTY: (614) 292-3162
Fax: (614) 292-5866
E-mail: dhuntt@mailcar.ovl.osc.edu
Web:train.ovl.osc.edu

Oklahoma ABLE TECH
Oklahoma State University Wellness Center
1514 W. Hall of Fame Road
Stillwater, OK 74078-2026
Phone: (405) 744-9748
Toll-free: (800) 257-1705 (V/TTY)
Fax: (405) 744-7670
E-mail: mljwell@okway.okstate.edu
Web: www.okstate.edu/wellness/at-home.htm

Oregon Technology Access for Life Needs Project (TALN)
1257 Ferry Street, SE
Salem, OR 97310
Phone/TTY: (503) 361-1201
Fax: (503) 378-3599
E-mail: ati@orednet.org

Pennsylvania's Initiative On Assistive Technology
Institute on Disabilities/UAP
Ritter Annex 423
Philadelphia, PA 19122
Phone: (215) 204-5968 (V/TTY)
Phone: (800) 750-PIAT (TT)
Fax: (215) 204-9371
E-mail: piat@astro.ocis.temple.edu

Puerto Rico Assistive Technology Project
University of Puerto Rico
Medical Sciences Campus
College of Related Health Professions
Office of Project Investigation and Development
Box 365067
San Juan, PR 00936-5067
From U.S. mainland: (800) 496-6035
Toll-free in PR only: (800) 981-6033
Phone: (809) 758-2525 x4413
TTY/Fax: (809) 754-8034
E-mail: pratp@rcmad.upr.clu.edu

Rhode Island Assistive Technology Access Project
Office of Rehabilitation Services
40 Fountain Street
Providence, RI 02903-1898
Phone: (401) 421-7005
Phone (Toll Free in RI) (800) 752-8088 ext.2608
TTY: (401) 421-7016
Fax: (401) 274-1920
E-mail: ab195@osfn.rhilinet.gov
Web: www.ors.state.ri.us.

South Carolina Assistive Technology Program
USC School of Medicine
Center for Developmental Disabilities
Columbia, SC 29208
Phone: (803) 935-5263 (V/TTY)
Fax: (803) 935-5342
E-mail: scatp@scsn.net
Web: www.cdd.sc.edu/scatp/scatp.htm

South Dakota Assistive Technology Project
(DAKOTALINK)
1925 Plaza Boulevard
Rapid City, SD 57702
Phone: (605) 394-1876
Phone: (Toll free in SD) (800) 645-0673 (V/TTY)
Fax: (605) 394-5315
E-mail: rreed@sdtie.sdserv.org
Web: www.tie.net/dakotalink

Tennessee Technology Access Project
710 James Robertson Parkway
andrew Johnson Tower, 10th Floor
Nashville, TN 37243-0675
Phone: (615) 532-6558
Phone: (Toll free in TN) (800) 732-5059
TTY: (615) 741-4566
Fax: (615) 532-6719
E-mail: rroberts2@mail.state.tn.us
Web: www.state.tn.us/mental/ttap/htm

Texas Assistive Technology Partnership
University of Texas at Austin
College of Education
SZ8252-D5100
Austin, TX 78712-1290
Info/referral: (800) 828-7839
TTY: (512) 471-1844
Fax: (512) 471-7549
E-mail: s.elrod@mail.utexas.edu
Web: www.edb.utexas.edu/coe/depts/sped/tatp/tatp.html

U.S. Virgin Island Technology-Related Assistance for Individuals With Disabilities (TRAID)
University of the Virgin Islands/UAP
#2 John Brewers Bay
St. Thomas, VI 00801-0990
Phone: (809) 693-1323
Fax: (809) 693-1325
E-mail: yhabtey@gecko.uvi.edu

Utah Assistive Technology Program
Center for Persons with Disabilities
UMC 6855
Logan, UT 84322-6855
Phone: (801) 797-3824
TTY: (801) 797-2096
Fax: (801) 797-2355
E-mail: sharon@cpo2.usu.edu

Vermont Assistive Technology Project
103 South Main Street
Weeks Building, First Floor
Waterbury, VT 05671-2305
Phone: (802) 241-2620 (V/TTY)
Fax: (802) 241-2174
E-mail: lynnec@dad.state.vt.us
Web: www.uvm.edu/~uapvt/cats.html

Virginia Assistive Technology System
8004 Franklin Farms Drive
P.O. Box K300
Richmond, VA 23288-0300
Info/referral: (757) 552-5019
Fax: (804) 662-9478
E-mail: vatskhk@aol.com

Washington Assistive Technology Alliance
DSHS/DVR
P.O. Box 45340
Olympia, WA 98504-5340
Phone: (360) 438-8000
TTY: (360) 438-8644
Fax: (360) 438-8007
E-mail: debcook@u.washington.edu
Web: www.weber.u.washington.edu/~atrc/

West Virginia Assistive Technology System
University Affiliated Center for Developmental Disabilities
Airport Research and Office Park
955 Hartman Run Road
Morgantown, WV 26505
Phone: (304) 293-4692 (V/TTY)
Phone: (Toll free in WV) (800) 841-8436
Fax: (304) 293-7294
E-mail: stewiat@wvnvm.wvnet.edu

WISTECH
Wisconsin Assistive Technology Program
Division of Supportive Living
2917 International Lane, 3rd Floor
Madison, WI 53704
Phone/TTY: (608) 243-5674
Fax: (608) 243-5681
E-mail: KIDDESB@mail.state.wi.us

Wyoming's New Options in Technology (WYNOT)
P.O. Box 4298
Laramie, WY 82071-4298
Phone/TTY: (307) 777-4386 or 777-7450
Fax: (307) 777-5939
E-mail: kmckin@missc.state.wy.us
Web: www.uwyo.edu/hs/wind/wynot/wynot.htm

123

BEST COPY AVAILABLE

Parent Training and Information Centers

The following is a list of the Parent Training and Information Centers (PTIs) that serve families of children and adults with disabilities throughout the U.S. The list is accurate as of this writing; however, the information does change frequently. For updates on any of the PTIs, call PACER or visit PACER's Web site (www.pacer.org).

ALABAMA

Special Education Action Committee Inc.
P.O. Box 161274
3207 International Drive, Suite C
Mobile AL 36616-2274
(334) 478-1208 Voice & TTY
800-222-7322 AL only
E-mail: seacmob1@juno.com

ALASKA

P.A.R.E.N.T.S. Resource Center
540 International Road, Suite 200
Anchorage AK 99518
(907) 563-2246 Voice & TTY
800-478-7678 in AK
E-mail: parents@alaska.net
Web site: www.alaska.net/~parents/@alaska.net

AMERICAN SAMOA

American Samoa PAVE
P.O. Box 3432
Pago Pago AS 96799
011-(684) 633-2407

ARIZONA

Pilot Parent Partnerships
4750 N. Black Canyon Hwy, Suite 101
Phoenix AZ 85017-3621
(602) 242-4366 Voice & TTY
800-237-3007 in AZ

ARKANSAS

Arkansas Disability Coalition
3920 Woodland Heights Road
Little Rock AR 72212
(501) 221-1330 Voice & TTY
800-223-1330 AR only
E-mail: adc@cei.net

CALIFORNIA

Parents Helping Parents
3041 Olcott St.
Santa Clara CA 95054-3222
(408) 727-5775 V/408-727-7655 TTY
E-mail: maryellen@php.com
Web site: www.php.com

TASK
100 West Cerritos Ave.
Anaheim CA 92805-6546
(714) 533-8275
E-mail: taskca@aol.com

Family Network of CA
594 Monterey Blvd.
San Francisco CA 94127-2416
(415) 841-8820

Exceptional Parents Unlimited
4120 N. First St.
Fresno CA 93726
(209) 229-2000
E-mail: etu1@cybergate.com

TASK, San Diego
3750 Convoy St., Suite 303
San Diego CA 92111
(619) 874-2386

Support for Parents
2601 Mission #710
San Francisco CA 94110-3111
(415) 282-7494

COLORADO

PEAK Parent Center, Inc.
6055 Lehman Drive, Suite 101
Colorado Springs CO 80918
(719) 531-9400 / (719) 531-9403 TTY
800-284-0251
E-mail: PKPARENT@aol.com

CONNECTICUT

CPAC
5 Church Lane, Suite 4
P.O. Box 579
East Lyme CT 06333
(860) 739-3089 Voice & TTY
800-445-2722 in CT
E-mail: cpacinc@aol.com
Web site: members.aol.com/cpacinc/cpac.htm

DELAWARE

Parent Information Center (PIC)
700 Barksdale Road, Suite 3
Newark DE 19711
(302) 366-0152 / (302) 366-0178 (TTY)
E-mail: PEP700@aol.com

DISTRICT OF COLUMBIA

COPE
300 I Street NE, Suite 112
Washington DC 20002
(202) 543-6482
1-800-515-COPE (National)

FLORIDA

Family Network on Disabilities
2735 Whitney Road
Clearwater FL 34620-1610
(813) 523-1130
800-825-5736 FL only
E-mail: fnd@gate.net
Web site: www.gate.net/~fnd

GEORGIA

Parents Educating Parents (PEP)
8318 Durelee Lane Ste 101
Douglasville GA 30134
(770) 577-7771
E-mail: PEPARC@aol.com

HAWAII

AWARE
200 N. Vineyard Blvd., Suite 310
Honolulu HI 96817
(808) 536-2280/(808) 536-9684 (V/TTY)

IDAHO

Idaho Parents Unlimited, Inc.
4696 Overland Road, Suite 478
Boise ID 83705
(208) 342-5884 Voice & TTY
800-242-4785
E-mail: ipul@rmci.net

ILLINOIS

Family Resource Center on Disabilities
20 E. Jackson Blvd., Room 900
Chicago IL 60604
(312) 939-3513 / (312) 939-3519 TTY
1-800-952-4199 IL only

Designs for Change
6 North Michigan Ave., Suite 1600
Chicago IL 60602
(312) 857-9292; (312) 857-1013 TTY
1-800-851-8728
E-mail: dfc1@aol.com

National Center for Latinos with Disabilities
1921 South Blue Island
Chicago IL 60608
312-666-3393; TTY 312-666-1788
E-mail: ncld@interaccess.com

Family T.I.E.S. Network
830 South Spring
Springfield IL 62704
217-544-5809
800-865-7842
E-mail: ftiesn@aol.com

INDIANA

IN*SOURCE
809 N. Michigan St.
South Bend IN 46601-1036
(219) 234-7101
800-332-4433 in IN
E-mail: insource@inspeced.ccmail.compuserve.com

IOWA

Call PACER for information.

KANSAS

Families Together, Inc.
3340 W Douglas, Ste 102
Wichita KS 67203
(316) 945-7747
1-888-815-6364
E-mail: family@inlandnet.net

KENTUCKY

Family Training & Information Center
2210 Goldsmith Lane, Suite 118
Louisville KY 40218
(502) 456-0923 or 800-525-7746
E-mail: fraeme@msn.com

LOUISIANA

Project PROMPT
4323 Division Street, Suite 110
Metairie LA 70124-3179
(504) 888-9111 or 800-766-7736
E-mail: fhfgno@ix.netcom.com

MAINE

Special Needs Parents Info Network
P.O. Box 2067
Augusta ME 04338-2067
(207) 582-2504
800-870-SPIN in ME
E-mail: lachance@saturn.caps.maine.edu

MARYLAND

Parents Place of Maryland, Inc.
7257 Parkway Drive, Suite 210
Hanover MD 21076-1306
(410) 712-0900 Voice & TTY
E-mail: parplace@aol.com

MASSACHUSETTS

Federation for Children with Special Needs
95 Berkeley St., Suite 104
Boston MA 02116
(617) 482-2915 (Voice & TTY)
800-331-0688 in MA
E-mail: zieg104w@wonder.em.cdc.gov
Web site: www.fcsn.org

MICHIGAN

CAUSE
3303 W. Saginaw, Suite F-1
Lansing MI 48917-2303
(517) 886-9167 Voice & TTY
800-221-9105 in MI
E-mail: cause@ix.netcom.com

Parents are Experts
23077 Greenfield Road, Suite 205
Southfield MI 48075-3744
(248) 557-5070 Voice & TTY
E-mail: ucpdetroit@aol.com

MINNESOTA

PACER Center, Inc.
4826 Chicago Avenue South
Minneapolis MN 55417-1098
(612) 827-2966 V; (612) 827-7770 TTY
800-537-2237 in MN
E-mail: mnpacer@edu.gte.net
Web site: www.pacer.org

MISSISSIPPI

Parent Partners
3111 North State St.
Jackson MS 39216
601-366-5707
800-366-5707
E-mail: ptiofms@misnet.com

MISSOURI

Missouri Parents Act
2100 S. Brentwood, Suite G
Springfield MO 65804
(417) 882-7434 (TTY)
800-743-7634 in MO
E-mail: mpac01@MCIONE.com

MONTANA

Parents Let's Unite for Kids
1500 North 30th St., Room 183
Billings MT 59101-0298
(406) 657-2055
800-222-7585 in MT
E-mail: PLUKMT@aol.com

NEBRASKA

NE Parents' Info & Training Center
3610 Dodge St., Suite 102
Omaha NE 68131
(402) 346-0525 Voice & TTY
800-284-8520

NEVADA

Nevada Parents Encouraging Parents (PEP)
601 S. Rancho Dr., Suite C25
Las Vegas NV 89106
(702) 388-8899 or 800-216-5188
E-mail: nvpep@wizard.com

NEW HAMPSHIRE

Parent Information Center
P.O. Box 2405
Concord NH 03302-2405
(603) 224-7005 (Voice & TTY)
800-232-0986 (NH only)
E-mail: picnh@aol.com

NEW JERSEY

Statewide Parent Advocacy Network (SPAN)
35 Halsey Street, 4th Floor
Newark NJ 07102
(973) 642-8100 Voice
800-654-SPAN
E-mail: autind@aol.com

NEW MEXICO

EPICS Project
P.O. Box 788
Bernalillo NM 87004
(505) 867-3396, ext. 109
800-765-7320 V/TTY
E-mail: swcrathighfiver.com

Parents Reaching Out, Project ADOBE
1000-A Main St. NW
Los Lunas NM 87031
(505) 865-3700 Voice & TTY
800-524-5176 in NM

NEW YORK

Parent Network Center
250 Delaware Avenue, Suite 3
Buffalo NY 14202
(716) 853-1570; (716) 853-1573 TTD
800-724-7408 in NY

Advocates for Children of NY
105 Court Street, Ste. 402
Brooklyn NY 11201
(718) 624-8450
E-mail: advocat1@idt.com

Resources for Children with Special Needs
200 Park Ave. S., Suite 816
New York NY 10003
(212) 677-4650
E-mail: vzhe93a@prodigy.com
Web site: www.epsty.com/resourcesnyc

Sinergia/Metropolitan Parent Center
15 West 65th St., 6th Floor
New York NY 10023
212-496-1300
E-mail: Sinergia@panix.com
Web site: www.panix.com/~sinergia

NORTH CAROLINA

ECAC, Inc.
P.O. Box 16
Davidson NC 28036
(704) 892-1321
800-962-6817 NC only
E-mail: ECAC1@aol.com

NORTH DAKOTA

Pathfinder Family Center
Arrowhead Shopping Center
16th St. and 2nd Ave. SW
Minot ND 58701
(701) 852-9426 / (701) 852-9436 TTY
E-mail: ndpath01@minot.ndak.net
Web site: www.ndcd.org/pathfinder

OHIO

Child Advocacy Center
1821 Summit Road, Suite 303
Cincinnati OH 45237
(513) 821-2400
E-mail: CADCenter@aol.com

Ohio Coalition for the Education of Children with Disabilities
Bank One Building
165 West Center St., Suite 302
Marion OH 43302-3741
(614) 382-5452 Voice & TTY
800-374-2806
E-mail: ocecd@edu.gte.net

OKLAHOMA

Parents Reaching Out in OK
1917 S. Harvard Avenue
Oklahoma City OK 73128
(405) 681-9710
800-PL94-142
E-mail: prook1@aol.com

OREGON

Oregon COPE Project
999 Locust St. NE, Box B
Salem OR 97303
(503) 581-8156 Voice & TTY
E-mail: cope@mail.ncn.com

PENNSYLVANIA

Parents Union for Public Schools
311 S. Juniper St., Suite 602
Philadelphia PA 19107
(215) 546-1166
E-mail: ParentsU@aol.com

Parent Education Network
333 East Seventh Avenue
York PA 17404
(717) 845-9722 V/TTY
800-522-5827 in PA
E-mail: pen@cyberia.com

PUERTO RICO

Parents Training Parents by APNI
P.O. Box 21301
San Juan PR 00928-1301
(787) 763-4665/765-0345 (Phone/fax)
E-mail: APNIPR@PRTC.net

RHODE ISLAND

RI Parent Information Network
500 Prospect Street
Pawtucket RI 02860
(401) 727-4144 / (401) 727-4151 TTY
800-464-3399 in RI

SOUTH CAROLINA

PRO-PARENTS
2712 Middleburg Drive, Suite 102
Columbia SC 29204
(803) 779-3859 Voice & TTY
800-759-4776 in SC
E-mail: pro-parents@aol.com

SOUTH DAKOTA

South Dakota Parent Connection
3701 West 49th St., Suite 200B
Sioux Falls SD 57106
(605) 361-3171 Voice & TTY
800-640-4553 in SD
E-mail: sdparent@connection.com
Web site: dakota.net/sdpc

TENNESSEE

STEP
424 E. Bernard Ave., Suite 3
Greeneville TN 37745
(423) 639-0125 / 636-8217 TTY
800-280-STEP in TN
E-mail: tnstep@aol.com

TEXAS

Partners Research Network Inc.
1090 Longfellow Drive, Suite B
Beaumont TX 77706-4889
(409) 898-4684 Voice & TTY
800-866-4726 in TX
E-mail: TXPRF@juno.com
Web site: www.salsa.net/~path

Project PODER
1017 N. Main Ave., Suite 207
San Antonio TX 78212
(210) 222-2637
800-682-9747 TX only

UTAH

Utah Parent Center
2290 East 4500 S., Suite 110
Salt Lake City UT 84117
(801) 272-1051
800-468-1160 in UT
E-mail: upc@inconnect.com

VERMONT

Vermont Parent Information Center
1 Mill Street, Suite A7
Burlington VT 05401
(802) 658-5315 Voice & TTY
800-639-7170 in VT
E-mail: vpic@together.net
Web site: www.together.net/~vpic

VIRGIN ISLANDS

V.I. FIND
#2 Nye Gade
St. Thomas USVI 00802
(340) 775-3962

VIRGINIA

Parent Educational Advocacy Training Center
10340 Democracy Lane, Suite 206
Fairfax VA 22030
(703) 691-7826
800-869-6782 VA only
E-mail: peatcinc@aol.com
Web site: members.aol.com/peatcinc/index.htm

WASHINGTON

Washington PAVE
6316 South 12th
Tacoma WA 98465-1900
(253) 565-2266 (Voice & TTY)
800-572-7368 in WA
E-mail: wapave9@idt.net
Web site: idt.net/~wapave9

PAVE/STOMP
10209 Bridgeport Way SW #A5
Tacoma WA 98499
(253) 588-1741 Voice & TTY
800-298-3543
E-mail: wapave9-2@idt.net
Web site: idt.net/~wapave9

WEST VIRGINIA

West Virginia PTI
371 Broaddus Ave
Clarksburg WV 26301
(304) 624-1436 Voice & TTY
800-281-1436
E-mail: wvpti@aol.com

WISCONSIN

Parent Education Project of Wisconsin
2192 South 60th Street
West Allis WI 53219-1568
(414) 328-5520 V; (414) 328-5525 TTY
800-231-8382 (WI only)
E-mail: colletti@omnifest.uwm.edu

WYOMING

Wyoming PIC
5 North Lobban
Buffalo WY 82834
(307) 684-2277 Voice & TTY
800-660-9742 WY only
E-mail: tdawsonpic@vcn.com